THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

VOLUME X
NUMBER 3

MARCH, 1902

WHOLE
NUMBER 93

THOUGHT VALUES IN BEGINNING ALGEBRA.

NOT long since an algebra teacher, whose pupils had studied the subject for a half year before she took them, remarked to her principal that they did not seem to know their previous work very well. He replied: "I don't see why that should be so. Mr. A., who had them in that work, is certainly a good drillmaster, and that is the important thing in beginning algebra." In my own senior review classes, in which the work was almost altogether at first a discussion of definitions and principles, some pupils were sure to ask after the first few weeks: "When are we going to begin the real algebra? This so far is just the introduction, isn't it?" I always said, "What do you mean by 'real algebra'?" and the answer was invariably, "Why, the working of examples," and sometimes "examples having letters in them instead of figures" was added.

These two incidents, one from the teacher's and one from the pupil's standpoint, illustrate what is perhaps the fundamental failure in present algebra teaching. The average teacher seems to regard ability to solve problems as the end in algebra work, and drill as the means to this end, and consequently most boys and girls who have had algebra think that it means only drill and grind. This is certainly not as it should be; it is the principle, not the problem, that is the heart and soul of mathematics, and knowledge of principles, together with the ability to think

abstractly, that results from the right teaching of principles, should be the immediate aim of the algebra teacher. How is this aim to be realized? First of all, not by assigning a page or so of definitions for the first lesson. One may safely say that elementary work should never begin with definitions. Of course some teachers will urge that it means a great loss of time if the definitions are not mastered to start with. Those who advocate the plan discussed later in this paper grant this freely and completely; they are quite willing that it should be so; time is lost, but power is gained, and that is an exchange which the teacher should always be willing to make. The desired end is to be reached, first, by following some simple, consistent, and well-arranged system of principles; second, by teaching these principles according to the so-called "inductive" plan. The theory of this plan is too well understood to need explanation here; but there are certain requisites, not always kept in mind, without which it cannot possibly succeed. Some of the most important of these are as follows:

1. A good understanding between teacher and pupils. If this exists, and the pupils are prepared for the work and so interested in it, matters of discipline and order will usually take care of themselves.

2. Both material and method must be fit; that is, not only logical from the teacher's standpoint, but adapted to the experience of the pupil. These do not necessarily conflict. When pupils have reached the logical stage in their development the logical method is also the psychological one.

3. Time — plenty of it. It is thought-work, and thinking cannot be hurried or done to order.

4. Notebooks. Much so-called inductive work is mere talk, resulting in nothing of permanent value. Results should be obtained. Principles and definitions should be thought out, formulated, written in notebooks, and learned (not memorized — there is a difference). In other words, the pupil should not only have the idea, but he should also have an adequate statement of it at his command.

5. "Induction" should always be followed by "deduction."

Principles should not only be discovered, formulated, and learned, but they should be immediately applied.

6. In the class there must be both "team work" and "individual playing." "Team work" means that the class all think together; it will not usually mean that they all talk together, though an occasional reply in concert may be worth while if it is spontaneous. It must not mean that the class all talk at once, each one saying a different thing. "Individual playing" means that one person acts as spokesman for the class. It may mean that he is the only one in the class who has thought the matter clear through and formulated it, but it must not mean that he is the only one who has thought at all.

7. The preparatory work outside of class should be in general thoroughly and conscientiously individual.

8. Occasional oral and written tests are necessary to enable both teacher and pupils to see whether results are being obtained or not. They also teach pupils to think coherently in a crisis, and, if of the right sort, they furnish valuable reviews.

Because it seems impossible to make plain the principles of the method under discussion without conrete illustrations, the following stenographic reports of two beginning algebra lessons are submitted. The reports can convey, of course, only the matter of the work; the spirit of it must be left to the imagination of the reader. Those who have had the experience of seeing in cold and inflexible type thoughts of their own that were vital and glowing when they were spoken will surely be charitable in their judgments.

The class in question numbers twenty-six and is of average age and intelligence. So far this year the work in mathematics has been theoretical work (definitions, principles, and demonstrations) in arithmetic. The lessons reported were not "prepared;" they were given at 9 o'clock in the morning and lasted, the first one hour, and the second forty-five minutes. At the first lesson there were twenty visitors present; the second was given under normal conditions. *T.* in the reports is for the teacher and *A.* for answer. No attempt is made to give actual names, or any names at all except in special cases. The reports

do not show, either, which questions were asked of the class as a whole and which of individual pupils. Every member of the class was called upon at least once during each recitation.

LESSON I., DECEMBER 4, 1901.

T. Our lesson this morning is simply a lesson in thinking; you will not need any notebooks for a time at least.

(Without further suggestion pupils cleared their desks. Slight pause.)

T. (writing 5 upon the board). Does this 5 mean anything to you? (There was no response, either by raising hands or orally). *T.* (after a pause). I am glad to see that my question meets with no response. It is just as it should be. Now that you have thought it over, how many are ready to answer. (A good many hands were raised). Well, Louis?

Louis. It means five units.

T. What does that mean?

Louis. It means five ones.

T. What does that mean finally?

Louis. Five whole numbers—five whole things.

T. The second part of your answer is right. Anyone else?

Frank. I do not think it means anything of itself; it is a sign.

Minnie. It is a symbol representing five units.

T. You have anticipated my next question, so I will pass on to another. Did this 5 always mean something to you? Does it mean anything to the youngest child in the kindergarten now?

Gladys. It doesn't mean anything to the child; at least he doesn't know the full meaning of it.

T. How did it come to have a meaning to you?

A. It was seeing it with relation to other numbers.

T. What do you mean? How did you get your own idea of five in the first place?

A. By being shown with pegs and things.

T. Are there any other answers?

A's. (1) By the counting frame. (2) Because there were five people in our family. (3) Because we have five fingers on each hand. (4) By the number of straight lines used in the figure.

T. (Writing ⅁ upon the board and rounding the two lower corners). That is very interesting, but we will not go into it further now. Who will give a name for this kind of five—five fingers, five people, and so on?

A. Concrete.[1]

T. To the kind I wrote first upon the board?

A. Abstract.

[1] To insist upon "complete" answers in this kind of work is fatal.

T. The first step in number is to get the concrete idea of number, the concrete idea of five, say; the next step is to go to abstract but still particular 5, 6, 7. (Writes 6, 7 after the 5); then to more general and more abstract *a*, *b*, *c* (writes *a*, *b*, *c* under the 5, 6, 7), and then to most general and most abstract *x*, *y*, *z* (writes). The last we shall not consider today (erases *x*, *y*, *z*, writes *a* by itself on the board). Does this *a* mean anything — anything that has to do with number I mean?

A's. (1) Yes; in writing outlines we used letters instead of figures to indicate some of the divisions. (2) In proportion we used letters sometimes to stand for the unknown quantity.[1]

T. Then this step will not be so difficult as it might be. Let us see — If John has two cents and James has three, how many have both?

A. Five cents.

T. Ellis, put this on the board with a sign to indicate the operation. (Ellis writes $\begin{array}{r} 2 \\ +3 \\ \hline 5. \end{array}$)[2]

T. Will some one write it in another way?

A's (1) $\begin{array}{r} 2\,c \\ 3\,c \\ \hline 5\,c \end{array}$ (2) $2+3=5.$

Pupil. I think I can write it still another way.[3]

T. (rather grudgingly). You may try it.

(Pupil wrote $\begin{array}{l} 2\,c = 1\,c + 1\,c \\ 3\,c = 1\,c + 1\,c + 1\,c \\ \hline 5\,c = 1\,c + 1\,c + 1\,c + 1\,c + 1c. \end{array}$)[4]

T. Thank you very much. That is exactly what I had planned to take up in the next lesson, and it will save us a good deal of time. We will leave it now and return to it again today if we can. I will now rub out the result in this example (teacher rubs out the $=5$ in the $2+3=5$, leaving the $2+3$). Will someone bring out a distinction between this as it now stands and this other case? (Pointing to $\begin{array}{r} 2 \\ +3 \\ \hline 5. \end{array}$)

[1] I had expected the answer *no* to this question.

[2] If children have been taught from the beginning of their number work to put the proper sign before the lower number, it helps greatly when they get to algebra.

[3] I nearly spoiled the best thing in the lesson here by saying, "I think we have had examples enough."

[4] This was wholly unexpected, and necessitated a reconstruction of the lesson plan.

A. In the second the operation is performed; in the first it is stated.

T. Another word for "stated."

A. Indicated.

Pupil. I think it is merely stated in a different way.

T. Very well, if you are satisfied with the result $2+3$, so much the better. Let us have several examples now; please indicate the operation instead of performing it. John has six cents and James has five; how many have both?

A. $6+5$ cents. (Several such examples were given).

T. (finally). John has a cents and James has b cents; how many have both?

A. $a+b$ cents.

T. John has c cents and James has d cents; how many have both?

A. $c+d$ cents.

T. I do not see that it is necessary to go any further with this. We are now ready perhaps for two statements of differences between what we are now doing, which is usually called "algebra," but which is really only literal arithmetic, and what we have been doing under the name of "arithmetic." There is really no hard and fast line between the two. (Draws a vertical line on the board.) We cannot say that everything on one side of this line is algebra, and everything on the other side is arithmetic. They run into each other. Still there are some distinctions that are commonly made. Who will suggest one?

A. Letters may represent any amount you want them to.[1]

T. I do not understand your answer. Go a little bit further. How do you come by the letters to start with? (Pause.) We are dealing with number in both cases. What do we commonly use in arithmetic to represent number?

(A brief discussion enabled the teacher to write upon the board this statement: 1. In "arithmetic" digits (figures) are commonly used to represent number, while in "algebra" letters are so used.)

T. Another difference, Harry?

A somewhat longer cross-examination led to this result:

2. Processes performed in arithmetic are indicated in algebra.

T. These are not yet entirely right; figures as well as letters are used, and operations are sometimes performed as well as indicated in algebra. We will show this by some examples. John has a cents; and James has a cents; how many have both? Who is ready?

A. $a+a$ cents.

T. Right, but there is another way of doing it.

Pupil. A times a cents.

T. Let us see. If you have 2 cents and I have 3 cents both of us have two times three cents, or 6 cents. Is that right?

[1] I failed to see the point in this answer.

A. No. (Pause.)

T. We will leave this, and get at it in another way. (Writes on the board; class gives answers together without direction.)

T. (1) 2 horses.
+3 horses.
Class. 5 horses.

T. (2) 2 pounds.
+3 pounds.
Class. 5 pounds.

T. (3) 2 *c* (for cents).
+3 *c* (for cents).
Class. 5 *c* (for cents).

T. (4) 2 *a* (for acres).
+3 *a* (for acres).
Class. 5 *a* (for acres).

T. Now, this time *a* is not to stand for *acres*, but for *anything*.

(*T.* writes (5) 2 *a* (for anything).
+3 *a* (for anything).
Class says, 5 *a*, when *a* stands for anything.)

T. (6) 2 *ab*.
+3 *a*b.
Class. 5 *ab*.

T. (7) 2 *abc*.
+3 *abc*.
Class. 5 *abc*.

T. I cannot resist the temptation to go one step further.

(Writes $2\ a^2\ b^2\ c^2$
$+\ 3\ a^2\ b^2\ c^2$,

and reads it, two *a* square, *b* square, *c* square plus three *a* square, *b* square, *c* square. The class responds instantly, 5*a* square, *b* square, *c* square).

T. But perhaps I ought not to have given you that. (Erases it.) What is the fundamental principle in all this — the fundamental principle in addition?

A. Only like things can be added.

T. Right. It makes no difference what they are, if they are alike they can be added. (Points to the 5 *a* in the example 2 *a*
+3 *a*
5 *a*. What does this 5*a* mean? You told me that the 5 meant something, and that the *a* meant something. What does the combination mean? We may understand each of two things without understanding the combination, because the combination may be quite different from either of the things — think of a match and some gunpowder, for instance. How is it here?

A. The 5 means five units, and the *a* stands for something.

T. What does the *a* stand for?

A. For anything.

T. 5*a* stands for five anything, then. What does this mean? (Pause.) *T.* (Referring back to the $5c = 1c + 1c + 1c + 1c + 1c$). Compare it with this.

Pupil writes $5a = 1a + 1a + 1a + 1a + 1a$.

T. Are we now ready for the original question? John has a cents and James has a cents; how many have both?

A. $2a$ cents.

(Teacher writes $a + a = 2a$.)

T. I wrote $a + a = 2a$; is that right, or ought I to have written $1a + 1a = 2a$?

A. It is right as it is.

T. Why?

A. That 1 is understood, because there is only the a there.

T. I will rub out the 1's and leave only the a's here. (Rubs out the 1's, leaving $5a = a + a + a + a + a$.) Now you are ready for the next point. If I express the operation, what sign shall I put between the 5 and the a?

A. Plus.

T. (Writing $5a = 5 + a$). Is that right?

A. No.

Pupil. Five equals a.

T. (Writes $5 = a$). You do not mean that, I am sure.

Pupil. It's multiplication, five times a.

T. That is right. If we take a and use it five times that is multiplication. (Puts a period between the 5 and the a.) Instead of the $\times$ we use a dot in algebra to indicate multiplication, because we want to use the $\times$ for another purpose. Now, in ab what is the relation between the a and the b?

A. a times b.

T. Is the relation the same in "arithmetic"? $ab = a \cdot b$; does $25 = 2 \times 5$?

Pupil. No, I do not think it is the same.

T. What is the relation between the 2 and the 5 in 25?

(After a number of mistaken answers, one pupil said:

It is addition, bearing in mind the fact of place; that is, two tens or twenty, plus five).

T. (Writes $25 = 20 + 5$.) Now, who is ready to state this third difference?

A. 3. The relation between digits in a number is that of addition bearing in mind the fact of place; while the relation between the letters in algebra is that of multiplication.

T. For tomorrow you may try to apply some of these things. I will start you. (Writes on the board $\left.\begin{matrix} 2 \times 2 = 4 \\ 2 + 2 = 4 \end{matrix}\right\}$ Therefore the sum of two numbers equals their product.) Who objects?

Pupil. It's true there, but not usually.

T. (Writes $\frac{20}{21} \div \frac{4}{7} = \frac{20 \div 4}{21 \div 7} = \frac{5}{3}$). Therefore to divide by a fraction one

may divide the numerator of the dividend by the numerator of the divisor to get the numerator of the quotient; and the denominator of the dividend by the denominator of the divisor to get the denominator of the quotient. Why not? (This had been discussed fully in arithmetic.)

A. You can't always do it.

T. Now it is possible that our proofs in multiplication and division of frctions may be only special cases like the ones I have given you. How will it be if we put letters in the place of the figures, $\frac{a}{b} \cdot \frac{c}{d}$ instead of $\frac{4}{5} \times \frac{2}{3}$, for instance?

A. That will make the proof more general.

T. For the next time, then, you may substitute letters for figures in your proofs of multiplication and division of fractions.

Notebooks were not used because the class cannot do this kind of thinking and take notes at the same time. Several days later this lesson was reviewed with especial reference to note-taking. Pupils keep two kinds of notebooks, temporary and permanent—*daybooks* and *ledgers*. Before the notes are put into the permanent books abundant opportunity for correction is given, and so the material in the daybooks is being continually revised.

If any pupil has a statement that he prefers to the one agreed upon by the rest, he is allowed to use it if it is a good one; usually, however, there is only one really good statement of a mathematical principle.

A subsequent lesson, No. II, began, after a review by showing the difference between $a+a+a+a+a$ and $a \cdot a \cdot a \cdot a \cdot a$. The outcome of the discussion was to formulate the difference between $5a$ and a^5. Some of the children supplied the term "exponent;" the teacher gave them the word "coefficient."

The lesson then proceeded:

T. John, you may define "coefficient."

(John cannot; no one volunteers.)

T. I see we must try again. Once more, what do we call the *a*'s in the scond case?

A. Factors.

T. And the five?

A. An exponent.

T. Make a definition of exponent.

A. An exponent indicates a certain number of factors.

T. (Writes it.) Very well, and a coefficient indicates a certain number of ——. (No response.) What do we call the *a*'s in the first case?

A. Addends — A coefficient indicates a certain number of addends.

T. That is partly right; we will leave it for a time. I do not know just how to get at the thing I want next, but I will try this way: One boy has five cents; another boy has three cents; what is their combined capital?

A. Eight cents.

T. One boy has eight cents in his pocket, and another boy is five cents in debt; they form a partnership just as the first two did; what is their combined capital?

A. Three cents.

T. In the first, how is the result obtained?

A. By addition.

T. In the second?

A. By subtraction.

T. How many agree? (Twenty-two agreed; four disagreed.) Indicate on the board the first operation. Pupil writes

$$\begin{array}{r} 5\,c \\ +3\,c \\ \hline 8\,c \end{array}$$

T. Now the other. (Pupil writes

$$\begin{array}{r} 8\,c \\ 5\,c \\ \hline 3\,c) \end{array}$$

T. What sign would you put before the five?

A. Minus. (Pupil writes it.)

T. (To pupil who voted in the minority.) What do you mean by saying that the second case is no different from the first?

B. The second boy did not have any money, so he had to take the money of the first by adding,

T. I do not quite see that. (To another of the four.) What is your reason?

Ellis. The proof of subtraction is addition.

T. I do not see that either. (To a third one of the four.) What is your reason?

A. Five cents plus how many cents equal eight cents.

T. That is subtraction — the computer's method, the same as Ellis' idea. (To last of the four.) What do you say?

A. I do not see how it can be anything but addition, because it is the combined capital that is three cents.

T. That is right; go back to your definition of addition, what is that?

A. Addition is the process of combining quantities.

T. The very fact that I said what is their *combined* capital make this addition, by definition. It is in a large sense, addition; in another sense, the majority is right; the operation itself is what you have always called sub-

traction. This brings us to another difference, a fourth one, between "arithmetic" and "algebra." Let us illustrate: A boy has ten cents, his uncle gives him five cents, and he spends a quarter; what is his financial condition?

A. (Given at once.) Ten cents in debt.

T. Indicate this on the board.

(Pupil writes $25\ c$
$15\ c$
$10\ c$ in debt.)

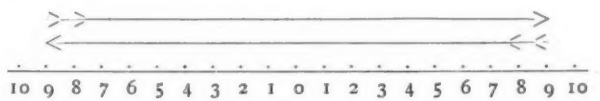
T. Write the whole example and put it in better order.

(Pupil writes $10 + 5 = 15 - 25 = 10\ c$ in debt.)

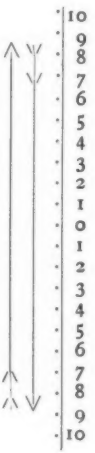
T. How else may you indicate that this is ten cents in debt rather than ten cents in hand?

(Pupil erases the "in debt" and puts a minus sign before the 10.)

T. We will now go at this in another way. (Teacher draws scale.)



We will try an experiment here. Put your index fingers at about the middle of the lower edge of your desks. Those who are right handed use your right hands and those who are left handed, your left. Now move your fingers an inch or so at a time as I point and count at the board; to the left first. (Teacher starts at zero, points and counts to the left, 1, 2, 3, 4, 5, 6, 7, 8, and pupils moves hands as stated.) Now put your fingers back at the starting point and move to the right in the same way. (This was done.) Now I am going to mark one of the directions indicated by these arrows, positive and the other negative. How many here have a decided opinion as to which direction should be marked positive and which negative? (There was no response. This is unusual in my experience.) I will ask the same thing in another way. (Teacher draws a vertical scale to 10.) Of course you immediately think of a thermometer. Are there any who had no preference before, who have a choice on this scale?



Pupil. I do not see what you mean.

T. We have two kinds of quantities in algebra, positive and negative. To illustrate this I have drawn these scales. We are to call one direction positive and the opposite negative. On this thermometer scale, for instance, if we call distance down positive, we must call distance up negative and *vice versa*; on the other, too, distance in one direction will be called positive and in the opposite direction, negative. Now once more try the experiment of moving your hands. This time go clear across with one motion instead of a little at a time, as before. (This was done.) Now how many have a preference with regard to the horizontal scale? (Twenty had a preference; six had none.) How is it with regard to the vertical scale? (All but three had a preference here. One of the pupils who had a choice with regard to the second scale, but not with regard to the first, was called to the board.)

T. Locate upon the scale positive 5 and negative 5. (Pupil marked the 5 above plus and that below minus.)

T. Now, quickly, before you have time to think too much, do the same thing on the other scale. (He marked the 5 at the right minus and the 1 at the left plus.)

T. How many agree with the first, positive up and negative down? (Twenty-three agreed.)

T. With the second, negative to the right and positive to the left? (Six agreed, nineteen disagreed, one had no choice.) (The signs of these 5's were now changed and the sign + was put with the arrows pointing up and right, and the sign − with the others.)

T. Let us now make a list of things we shall call positive and of those we shall call negative. I will write for you. (Teacher writes:

+	−
Positive	Negative)

We have already had money in hand (cash) and debts; how do these go?

A. Cash, positive; debts, negative.

T. The better terms are probably assests and liabilities. (Writes.) (Pupils add above zero, positive; below zero, negative; so above and below normal, right and left hands.)

T. Walter, you may look up for us next time the origin and the meaning of the words *dexterous* and *sinister*, and see if this has anything to do with the matter we have been talking about, and you may all continue this list just as far as you can. By the way, who of you are left-handed, and how did you vote?

(Two were left-handed; they voted with the majority.)

T. Now take this question: Add positive 5 and negative 3. What will that mean on the scale? Herbert, take the pointer and show us.

(H. starts at +5 and goes to −3.)

T. That is what we call subtraction in algebra — finding how many units lie between two numbers. Another answer?

A. Travel from positive 5 three places to the left.

T. Right, and this lands you where?

A. At positive 2.

T. Write it.

(Pupil wrote 2 and then put + before it.)

T. Always write first the sign which shows the direction, and after that the number, which shows where you arrive. There is one other point before we leave this. You all said a little while ago that we were to start at positive 5. Is there any other opinion about this? If we go back further, where shall we begin? Where did this +5 come from? Did anybody have it to start with? Where must everyone begin?

A. At zero.

T. (Diagrams below the scale 0 ——————— +5 and says):

+2

The whole operation then is from zero five units to the right and then back three units to the left, stopping at positive 2. (This prepares the way for the idea that the first term in a series may be thought of as added to or subtracted from zero, and also for some important work in physics later.)

T. Your next lesson will be: (1) Complete your list of positives and negatives. (2) Work a number of examples, using a scale, and decide about the nature of the sign in the result. Who sees from the examples already given several heads under which all such examples will fall?

A. Three: both positive, both negative, one positive and the other negative.

T. (Continuing.) (3) Complete the sentence: "A coefficient indicates a certain number of ——."

REMARKS

The outcome of this lesson may be of interest. In answer to the first question pupils brought in long lists of positives and negatives; these were written upon the board, and the pupils divided them into two classes: those about which there could never be, as they said, any difference of opinion, and those which might be called positive in some cases and negative in others. It is interesting to note that they were unanimous in calling good positive, and bad negative, right positive and wrong negative, but insisted that these should not be put into the same class with pleasant and unpleasant, beautiful and ugly, satisfactory and unsatisfactory, etc. (Children seem to be usually transcendental in their ethics.)

They were asked whether the photographic negative, and the positive and negative plates of an electric cell are named as they

would expect them to be. The first question was answered affirmatively at once. Most of the class knew nothing about electric cells, and so could not answer the second question. A pupil who did know was therefore called upon to give what he considered the necessary information. He said that the acid worked upon the zinc but not on the carbon. The class said immediately that the zinc plate ought to be postive and the carbon plate negative, "Because," as one put it, "there is something going on at the zinc plate, while there isn't at the other."

The law of signs was correctly stated by several pupils. (Those who do not succeed in discovering things for themselves must, of course, get them as they are given by others in class). It appeared, however, from a question asked at this point, that not all had understood why the operation is really addition in the case where the signs are different. This was therefore discussed at length, the illustrations being diagrams showing applications of the law of physics: "Every force has its full and due effect, whether it acts alone or in connection with other forces." *E. g.*: Problem—One force alone would move a weight from a certain place, which we will call zero, 5 units to the right in a second; another force would move it 3 units to the right in the same time. What effect would both forces have (*a*) if they worked separately each for one second? (*b*) if they worked together for one second? They said that if the forces worked separately one would move the weight 5 units to the right, and then the other would move it 3 units farther, so that it would be at +8 at the end of one second. There was some difficulty about case (*b*), but they said finally that if the law was true, the weight must go to +8 just the same, only it would get there now in one second instead of two. They all saw that this is addition. Then they were asked to solve the above problem when the second force acts in a direction opposite to that of the other. They said that in case (*a*) the weight would move 5 units to the right in the first second, and 3 units to the left (back 3 units) in the second second; in case (*b*) they finally decided that the weight would move to the right, arriving at +2 at the end of one second, and that this, too, must be addition, because the

2 represented the combined effect of the two forces just as much as the 8 in the first illustration did.

The statement in the third question was completed by adding the words *addends* or *subtrahends*. The teacher gave the word *terms* to include both of these.[1] A list of expressions like "$5," "5 bushels," etc., was written upon the board, and the pupils readily completed the sentence, "A term is an expression that represents a certain ——," by inserting "value, "amount," or "quantity." Then the signs + and − were placed before the numbers previously written and reference was made to the lists of positives and negatives upon the board; the pupils were asked why they classified them as they did, and finally worked out the second part of the definition: "and a certain tendency, direction, or *quality*. If this tendency is in a direction that seems naturally satisfactory, desirable, or progressive, the term is called 'positive;' if in the opposite direction it is called 'negative.'"[2]

There are just three ideas in beginning algebra: terms, factors, and equations. Between the first two exists a one to one correspondence that clears up the thinking in elementary algebra wonderfully when it is made explicit. The following is a partial table:

TERMS.	FACTORS.
1. Terms are expressions to be added or subtracted.	1. Factors are expressions to be multiplied or divided.
2. A coefficient is a term index.	2. An exponent is a factor index.
3. A positive coefficient indicates a certain number of positive terms (addends in the arithmetical sense).[3]	3. A positive exponent indicates a certain number of direct factors (multipliers).[4]
4. A negative coefficient indicates a certain number of negative terms (subtrahends, as before).[3]	4. A negative exponent indicates a certain number of inverse factors (divisors).[4]

[1] (The pupil's first idea of terms should be that they are the addends and subtrahends of his arithmetic work. This easily develops into the notion of *quality* later. The broader definition of terms was also developed in this lesson.)

[2] This definition was made by Group X in the University of Chicago Elementary School last year. In the present case the teacher gave the outline of the definition, but the pupils furnished all the key words except *quality*.

[3] The first of any series of terms may always be considered as added to or subtracted from zero.

[4] The first of any series of factors may always be considered as multiplying or dividing one.

TERMS.	FACTORS.
5. Similar terms are such as differ not at all or only in their coefficients.	5. Similar factors are such as differ not at all or only in their exponents.
6. Similar terms are added by adding their coefficients.	6. Similar factors are multiplied by adding their exponents.
7. Similar terms are subtracted by subtracting the coefficient of the subtrahend from that of the minuend.	7. Similar factors are divided by subtracting the exponent of the divisor from that of the dividend.
8. A subtrahend may be written as a minuend or *vice versa*, if the sign of its coefficient be changed.	8. A divisor may be written as a multiplier or *vice versa*, if the sign of its exponent be changed.

As to the time when the third idea mentioned, the equation, should be introduced, there is a difference of opinion. The writer would postpone it until considerable other work had been done, until after addition and subtraction at least. The objection to introducing it earlier, is that it gives the pupils the start with the idea that algebra is only a new way of solving examples, while they should think of it first as a new method of abstract thinking. (See introductory paragraphs.)

CLINTON S. OSBORN.

THE ETHICAL CULTURE SCHOOLS,
New York City.

SOCIAL SCIENCE AND THE CURRICULUM.

ROUSSEAU looked back longingly to the days when prehistoric men lived in primal virtue a happy and blameless life. In somewhat the same way, when we confront the complex and baffling problems of today, we think enviously of the simple existence of our primitive ancestors. They held neither convention nor institute. They were innocent of round tables. They solved the puzzles of life one by one as best they could, but they reflected little on their aims and methods. The education which they gave their children fitted them for the life of the group. The simple sum of social knowledge was easily communicated. The primitive dexterities, handicrafts, and social virtues were passed on chiefly by contact of children with parents. Where each man knew all there was to know, and could do all that anyone did, education was relatively simple. But as knowledge and dexterity increased, they came to overburden single minds; division of labor, intellectual as well as manual, began. Primitive philosophy became the province of the "medicine men," whose successors are the philosophers, theologians, scientists, preachers, and teachers of today.

With the centuries the growing mass of human knowledge has been more and more minutely subdivided; man's world has been resolved into its elements. But along with this analysis has always gone the effort to patch the pieces together, to keep man's experience whole. This great antithesis appears in our current educational theory and practice. On the one hand, we find the constant pressure of new subjects which clamor for admission to the curriculum; on the other hand, we hear the cry for correlation, co-ordination, concentration. It is urged that the life of the child must not be broken up into unrelated fragments; that all these artificially divided studies must be related and kept in unity in the child's growing mind.

Still another tendency asserts itself. We hear much in these days of "the social aspects of education," of "the sociological

basis of education," of "the school as a community," and of "school and society." If one may risk the interpretation of vague movements of thought such as these, I venture to assert that this social tendency of education is only another aspect of the inevitable process by which men struggle to see things whole. The conception of the origin and development of the nature and end of society sweeps into unity all the fragmentary knowledge of mankind. The socializing of education, then, is an effort to give pupils, little by little, a way of looking at society which shall enable them gradually to see things in their relations, to order conduct, and to contribute something to the stability and enrichment of the life they live in common with their fellows.

Those who cultivate history, economics, politics, anthropology, and sociology, and who believe that social science in a large sense has an all important rôle to play in education, are naturally concerned to know what relation these studies may sustain to the elementary and secondary schools. They know that these subjects are at present almost wholly university pursuits, but they remember that certain of the studies which in recent years have crept into the high school and the grades have made their way downward from the institutions of higher learning. The study of science affords a conspicuous illustration. Geology and botany, zoölogy and physiology, gradually lose their identity as they are traced through the high school down into the grades, where they merge into the undifferentiated protoplasm called "nature study." This process may well serve as a model to those who are anxious to see the social sciences influence the earlier years of the school. And yet I fancy that none of these social scientists, with all their desire to gain admission to the grades, wish to increase the number of subjects now included in that interesting mosaic known as the common-school curriculum. They simply ask for a larger interpretation of the subjects which are now taught, or, perhaps better, the use of these subjects, enriched in some degree, as vehicles of social knowledge and ideals.

Education is essentially a socializing process. Every group

educates its members by many devices. This education is always going on. The school is only one agency of this process, and it must adjust its aims and methods to the great social forces which are molding the young in a multiplicity of ways. A study of the social sciences suggests to those who control the schools the principles which must be followed, as well as the materials of instruction and inspiration by which the development of the young into socialized citizens may be furthered.

Social science has already a place in the curriculum. Almost every subject now taught has its social aspects, and these are in many cases emphasized. But not until the teacher looks at these subjects from the point of view of social science can the curriculum yield its richest results in knowledge and character. The plea I have to make, then, is not a plea for anthropology in the second or third grades, nor a demand for sociology in the high school, but an urgent appeal for the unifying of the curriculum by a social philosophy concealed in the lower stages from the pupils, but clearly present in the mind of the teacher.

Let us trace for a moment the inevitable process by which knowledge grows with advancing years in the mind of the child. In the first stage we have the isolated bits of knowledge, related here and there, and now and then to the shifting interests of the young mind; the story complete in itself, the fact or explanation which solves the problem of the moment. The eager growing mind stores itself with these fragmentary, fascinating things. Then follows the stage in which small groups of these interesting images are brought into relationship. The exhilaration which comes with this putting of things together is known to every teacher. Gradually the process grows wider and more definite. The smaller groups of fact are merged in ever larger and more significant unities, until finally, with the upper grades and the high school, the period of systematic reflection dawns. The earlier experiences of childhood are re-read and re-interpreted in the light of the larger knowledge. Generalization in its legitimate form is made possible by the preparation of the earlier years. It is thus that nature study in the kindergarten and in the lower grades is gradually organized into the "ologies" of

high school and college. In similar fashion the social scientist demands for children the concrete knowledge and experiences out of which, in due time, logical sciences and practical wisdom may develop.

In providing appropriate materials, two aims must be kept constantly in mind: the genuine interests of the child at different stages of his growth, and the maturer view of life toward which this growth is to be guided. The child's interests are at first supreme, but even if this be granted, there are choices of appropriate facts and occupations, and these choices must be determined by the ultimate end in view.

The socializing movement is well under way. In kindergarten and elementary school social materials have long been recognized. The simple industrial processes of weaving, clay-modeling, woodworking, and food preparation have been utilized, but in rather too conventionalized a way. We note in Professor John Dewey's theory and practice the beginnings of a movement back to nature, or rather back to primitive manufacture. Children weave baskets rather than paper mats. They mold pottery rather than balls and cubes. They make looms and wagons and houses rather than conventional elements of carpentry. They cook food for actual use instead of making premature experiments in physics and chemistry. Thus manual training may be socialized in the sense that it may be brought closer to social life and its actual activities, past and present. In later stages it becomes inevitably and properly more conventionalized, specialized, and precise.

About these industrial processes naturally gather ideas as to the utilizing of raw materials, the working of them into finished products, the comparison of crude, primitive processes with the highly organized production of today. It is impossible to deal with these topics without grouping about them many facts of social and industrial history; thus the idea of change in human affairs, the ideas of organized industry and of commerce gradually emerge from these activities and interests of the early grades.

It may be remarked in passing that we may well question

the value of economics in the high school, so long as the lower grades are not supplying the elementary ideas which economic science generalizes and arranges in logical form. But in the investigation of industry and commerce, great facts of diversified natural conditions, of mineral resources, of agricultural products, of varying climates, of transportation by land and sea, are inevitably involved.

Geography is being vitalized by this contact with human life and institutions. It is no longer an isolated and dull pursuit. It becomes a study of man's home, the scene of his conquests. The influence of natural conditions on the industry and life of man becomes a fascinating topic. The determining effect of mountain and plain, of river and pass, on the course of history, emerges from one concrete illustration after another. On the other hand, geography is only another aspect of nature study. The lives of plant and insect, bird and beast, take on new meaning when their stories are told in relation to their environment and to mankind. The work of Colonel Francis W. Parker and his staff has demonstrated the value of socialized geography in relating all the subjects of the program.

The formal pursuits of the curriculum, so called, lend themselves readily to the social point of view. The reading-book will undoubtedly become more and more the vehicle of appropriate descriptions and anecdotes which bear upon social life. Much of the old literature will remain, but some of it is already being replaced by stories of primitive life, of typical industrial processes, and tales and songs not only of past heroism, but of duty bravely done today.

It is needless to indicate the ways in which number work is now related to manual training, history, geography, nature study, and other subjects of the school program.

But to the study within the school must be added the visiting of industries and other institutions, As a matter of course, the teacher of nature study sends her pupils afield for material or accompanies them on expeditions into wood and meadow. A few wise teachers are in the same way making the mill, the railway shop, the factory, the power-house, the post-office, the

press-room, the fire station, definite means of instruction for their pupils. There is no more common blunder than to suppose that the everyday life of the community is understood or interpreted by its citizens. The increasing use of stereopticon and slides will not only enrich the study of history, geography, and science, but will add vastly to the means of instruction in industrial and institutional life. Sets of slides will trace the progress of iron ore and coal into steel, of cotton plant and wool into cloth, and will show the men and machinery at work in mine and mill, in field and factory. The lantern will display rural life to city children, and in turn carry these urban pupils into the country. The interests of growing children may be easily guided in such a way that they will appropriate a great mass of material concerning the institutional life of their social group. This will be of value at the time. It will serve as a means of genuine education, and later on will give deeper insight into the nature of social forces.

As pupils advance through the upper grades into the secondary school, history and literature, in conjunction with geography and science, furnish the best instruments of social instruction. History enriched by some knowledge of primitive life, some conception of economic organization and its influence on men, will become more than the records of battles and dynasties. The idea of social change, of cause and effect in history, may be more and more consciously introduced and discussed. The past must be to a large extent interpreted in terms of the present. The characters and deeds of Greeks and Romans, of Teutons and Franks, can be understood only by those who have some insight into the universal motives of mankind. The attempt to imagine the past will be futile or feeble on the part of those whose activities and interests in the present have been narrowed and formalized. The child who has made a basket or woven a tiny blanket can reproduce more vividly the life of the American frontier than one who has known nothing of such tasks.

The annals of the pupil's own family as an aid to the study of history have been almost wholly overlooked. The earliest

ideas of change and continuity in human affairs the child gains at the knee of father or mother. "Tell me a story about when you were a little boy," is the familiar formula. The story of life when parents were young is full of fascination for the child. The still remoter chronicles of grandfather and grandmother fill him with wonder over the lapse of time; while his small imagination fairly breaks down as it tries to conceive the life of great-grandparents and other dimly distant ancestors. The study of family histories and reports upon them in the school may be made points of departure in the lower grades for numberless excursions in geography, in the history of the westward migration of population in the United States, in the means of transportation, and in the housing and the industries of the frontier. Where the pupils' families are quickly traced back over sea, the longer journeys and the wider relationships are full of suggestions. One refrains from details which have no place in what must be a brief survey of so wide a field. Enough has perhaps been indicated to emphasize the principles involved.

Literature as a means of social instruction has inexhaustible possibilities. The conception of literature as a product, an expression, of social life can be developed. Language itself thought of as a social growth takes on new meaning. The interpretation of a piece of great literature, the reading into it of men's motives, the asking, "Is it true to life?" start fruitful inquiry and illuminating discussion. A careful reading with a class of one of Emerson's essays is a lesson in psychology, in ethics, in history, in language, in literature all at once—and, what is noteworthy, the pupils never suspect that these profound names are lurking beneath the delightful exercise.

The value of the problem in instruction has been fairly recognized in mathematics, physics, and chemistry, but in less exact subjects it has been too much neglected. After all, the real test, if not the best means, of "correlation" is problem-solving—the bringing to bear of all the necessary elements of knowledge upon a given concrete situation. The possibilities of problem-setting are being studied. It is not utopian to set social problems, to describe situations, and to invite solutions.

The teacher with a sand box and a few toy houses may set the problem of building a village which shall have houses, schools, churches, factories, stores, etc., appropriate for a specified population in an environment and with transportation facilities indicated at the outset. The discussions and criticisms involved in such a task could not fail to be fruitful. This is only a suggestion of the devices available for stimulating reflection upon the various aspects of social life.

So far stress has been laid upon instruction, upon gaining insight into the nature of social organization; but education is more than instruction. Unless the pupil from all his study of industry and nature, of geography and commerce, of history and literature, gathers appropriate sentiments, selects worthy types of personality and conduct, comes to respond with bounding pulses to the best ideals of personal development, of social service, of loyalty to country, of devotion to righteousness, the whole effort has been futile. Knowledge which is not transmuted into character is abortive.

Yet the problem of moral education is baffling. The dogmatic teaching of virtue is all but hopeless. Ideals are assimilated from the community in so subtle a way that it seems almost impossible to control the individual's development. The teaching of formal ethics comes at a later stage of reflection, and it is a question whether moral philosophy in college has much effect upon character.

The real task is to influence those instinctive, unreflective approvals and disapprovals with which the individual looks upon men and conduct. There are virtues which our times demand, which it is hard to cultivate. A high ideal of commercial honor, a passion for truth and tolerance, an admiration for political integrity, a deep sense of civic duty, are not unhampered growths in a society like ours.

The idea of self-government in our schools arouses interest. The autocracy of the schoolroom seems an ill preparation for life in a democracy. The experiment of self-control is worth trying, and there is reason to hope for valuable results, but we are not surprised to learn that the ethical standard of the out-

side community often dominates the school. The "ring" or "machine," favoritism, gross partisanship, wire-pulling, log-rolling often find their way into the student government. To arouse feeling among the pupils against forms of conduct which are tolerated, or secretly, if not openly, admired in the outside world, is a difficult and delicate task.

But little by little through the years, if the right materials are gathered, if sound and sane suggestions come from personalities which inspire respect and affection, these higher impulses may be strengthened into stable virtues. History and literature and life must be searched for noble personalities and high types of conduct, and these must be held up for admiration and emulation wisely, persistently, untiringly. In the earlier years, discussion and analysis have little place. The emotions come without conscious reflection. Later, comparison and debate, if they do not degenerate into arid dialectic, serve a useful purpose. But the emphasis in the socializing of education should rest upon the early stages where character is laid down in emotional valuations of man and morality.

It is in this field of moral education that I would emphasize the plea, which Professor Patten made some years ago, for contemporary heroes. Let pupils search the press and the community for high types of conduct. The fireman, the railway engineer, the life-saver, the miner, the factory hand, the reformer, the philanthropist of today aid the formation of ideals no less than mediæval crusaders or the heroes of Greece and Rome. There are virtues universal, virtues of purity and courage, of loyalty and self-sacrifice, admirable in all lands and in all ages; but these virtues are interpreted by every people and every epoch. The virtues of the past must be translated into those of the present. As abstract virtues they are lifeless things; they must be incarnated in personalities before they can have power over the young. Here literature and life lend their aid.

The great problem of American education, then, is the problem of making better citizens. Even to state this is to perpetrate a platitude, to obtrude the obvious. But the solution of the problem lies in bringing the school into closer relation

with life. The studies which have been too far abstracted from human experience must be brought back again into contact with the concrete social experience from which they sprang. The highest ideals of co-operation, loyalty, sacrifice, which men have wrought out in the past and present must live again in the personalities of the young. Only mature life can see the full development of character, but the socialized school, under the guidance of a high-minded teacher who sees life whole, may render unvaluable service.

GEORGE E. VINCENT.

THE UNIVERSITY OF CHICAGO.

EDUCATIONAL MOVEMENTS IN ENGLAND.

V.[1]

My last report upon educational movements in England was occupied with four distinct fields of interest—the re-organization of the University of London, the growth of the new education department, consequential parliamentary legislation, and the vigorous efforts to establish a basis, or, shall we say, a rallying point for that elusive union of educational parties which all pretend to desire but so few are willing to achieve.

As I write, ten months have passed away, the curtain has risen and fallen many times—rising in hope, falling in despair—and the scene is wholly changed. The general educational council is dead, slain by "them of its own household," by the apathy, not to say the pusillanimity, of the very leaders of education, who began by blessing it as "the one thing to be desired above all others." At the last public meeting, in January of this year, the attempt to give the primary schools a representation in just proportion to their numbers and organization proved too much for the magnanimity of the rank and file of secondary educationists. Though the originator of the idea and a few stalwarts endeavored to recast the constitution, defections rapidly increased, and the fruition of this excellent effort for educational solidarity had to be left, as so often in the history of the world, to later days, younger hands, and the fostering care of a riper public opinion.

In the three other fields of interest, though life is not extinct, and may even be described as vigorous, the good old tag, *parturit mons nascitur ridiculus mus*, is ever in mind of the thoughtful spectator. Parliament and the new education department have travailed, but neither can be said to have brought forth much more than windy promises.

A secondary education bill we have; but gods and men

[1] See SCHOOL REVIEW, January and November, 1900.

alike are dissolved in laughter at the weakling offspring of the largest parliamentary majority of modern times. A secondary inspectorate we have, but, after the British manner, proportionate only to the needs of the current day and hour, and in no way calculated to instil respect or inspire enthusiasm by its strength or brilliance. Lastly, it was not until eight months had elapsed that the reorganization committee of the University of London accomplished the selection of three higher officials, while London watched and waited for the constitution of its metropolitan university. Happily, now that this first choice of extraordinary difficulty has been effected, things are moving more rapidly, and there is some promise of really practical developments in the autumn. To these I will return; but some minor features of current educational history may be disposed of briefly.

First among these minor matters is the intrusion of the omnipresent "khaki" into the field of education. It may seem uncharitable to insinuate commercialism where the alleged motive is pure patriotism; but there can be no doubt that the prevalence of war fever afforded the great public schools an excellent opportunity for exploiting their army-classes and the attached cadet corps. The headmaster's conference of last January, not unjustly described as a "khaki conference," gave a vigorous push to the ball which the war fever started, and which a fervid rivalry among the headmasters has kept rolling. But the government, mindful of its master the taxpayer, looked coldly upon the proposed scheme of military instruction, and the wearisome prolongation of the war would seem to have damped down the original ardor. Little is heard now on the subject, and the net result is only the private benefit of certain schools which keep their fingers on the pulse of public opinion and profit accordingly in due season. National education cannot be said to have been materially affected.

Security of tenure, a very old and vexed question, has again come to the front. Some arbitrary dismissals at Alleyn's School, Dulwich, aroused public opinion and stimulated the government early in the year to promise a bill next session dealing with

dismissals, and giving a right of appeal. But Sir John Gorst expressly refused to include teachers in schools under the endowed schools acts, thereby again illustrating the government contempt for that section of English education which, being unorganized, is unable to exert political pressure. Public indignation was further stimulated when seven professors and lecturers of the Engineering College at Cooper's Hill, with a record of services varying from nine to thirty years, were dismissed at a term's notice by a minute of the India Office. Economy with increased efficiency was the ostensible reason. Eventually the government yielded to the pressure of public opinion, and withdrew the edict of dismissal pending a supplementary report from the board of visitors of the college, who were, moreover, strengthened by the addition of representatives of the universities of Oxford, Cambridge, and London. But it soon appeared that there was no real grit in the intentions of the government, and consequently when the bill which they introduced in the summer was opposed by the voluntary school interest they hastened to avail themselves of this opposition as an excuse for dropping the bill. The opposition seems to have been prompted by the fear that, under the proposed bill, it would be impossible to get rid of inefficient teachers; but the bill contemplated little more than a justification of dismissals by school managers on appeal to the board of education. Doubtless, and not unnaturally, the voluntary school managers did not care to be saddled with the task of justification.

But even the perennial question of security of tenure has been thrown into the shade by the educational *cause célèbre* popularly known at "Regina *vs.* Cockerton," which has convulsed the elementary school world. The manifold subtleties of this dispute would be neither intelligible nor interesting to American readers. The main points are briefly these (I quote from an excellent exposition in the *Journal of Education* for January, 1901):

> School boards generally, since the time of Mr. Mundella's vice-presidency (of the committee of the privy council on education) have considered that they have been justified in spending the rate raised under the act of 1870

upon day and evening science and art classes not earning a Whitehall grant, but a South Kensington grant, because (*inter alia*) the term "elementary school" in that act was defined to mean a school or department in which "elementary education is the *principal* part of the education there given." The school boards have interpreted this definition as meaning that, as long as 51 per cent. of the children learn only elementary subjects, 49 per cent. may be having a university education in the board school at the cost of the rates. Others say that the meaning of the words is that any child in the school, if he spends (say) 90 per cent. of his time in learning elementary subjects, may spend 10 per cent of his time on more advanced subjects. In any case, the act of 1890 removes the "principal part" restriction from evening schools as a condition for a *parliamentary* grant.

Now the parliamentary grant for evening continuation schools, as regards science at any rate, is only given on condition (*vide* evening continuation school code) that the instruction is more elementary than that of South Kensington. Hence we have the question: Is the money raised by school board rate strictly parallel in its expenditure to that given by parliamentary grant under Whitehall regulations; so that when a child is not earning an attendance grant from Whitehall during that period of time he is not a fit subject for school board expenditure?

The question came to the front in London in this wise: The London school board adopted the *free* system for its science and art classes, which the other school boards have not done. Hence the polytechnics, or other fee-charging schools of science and art, rapidly lost their pupils, while the school board classes cost the rates a large sum to supply the loss of fees. The Camden School of Art, in particular, took exception to the expenditure at Medburn Street Higher Grade School. The city corporation also objected generally to the rate expenditure on such higher education. The auditor, on the motion of these objectors, disallowed seven items, but in only three cases was the question fought out in court. The parties concerned agreed that the questions for the court were: (1) Whether it was within the powers of the board as a statutory corporation to provide science and art schools or classes, either in day schools or in continuation schools; (2) whether it was lawful for them to pay the expenses of maintaining these schools or classes out of the school board rate or school fund; (3) whether the rule *nisi* should be made absolute in regard to any or what disallowances and surcharges.

The judgment was unanimous against the school board. It was decided that Whitehall and South Kensington were absolutely distinct as regards these parliamentary grants, and that school boards existed only to earn the Whitehall grant. Mr. Justice Wills put the point clearly when he said that school boards existed only for obligatory purposes, and that they are "under no obligation to go beyond the subjects of the education code."

The question arises now, what will be the practical result if this judg-

ment is maintained in the higher courts? It will not necessarily shut up a single higher grade or continuation school. In many of the towns of the north it will not even inconvenience these schools. Where the school board act simply as managers, taking fees from all scholars, and getting a grant from the borough council under the technical instruction or local taxation acts, the schools will go on as heretofore. Such schools need cost the rates nothing; in fact, may even save the rates. The school that must cease is the free school and the school which ignores the local authority and its funds.

These are the facts of the original controversy and a fair statement of its real scope and probable consequences. The advocates of the school board forthwith raised the cry of wholesale ruin. The whole system of higher-grade schools had received a fatal blow, and, incidentally, continuation schools for adults had been shown to be illegally charged to the cost of the ratepayer, no charge for any thing beyond absolutely elementary education being legal. The matter was complicated by the more or less conscious connivance of the old education department. The immediate result of the decision against the school boards was to produce a dead-lock. Rightly handled this dead-lock would have provided the president of the council, the Duke of Devonshire, with "the one new factor that would enable him to force the claims of education upon a ministry that has hitherto shown scant sympathy in this direction." What he has accomplished toward seizing his opportunity will be seen presently.

Meanwhile, the London school board having decided not to appeal to the House of Lords, for the present the Cockerton judgment is law. But the danger of chaos in the autumn has been obviated by an ingenious evasion of the spirit of the judgment in London, and in the eight county boroughs concerned an arrangement with the local authorities for technical education to carry on the schools next winter will be the probable solution. In the former case the device employed is to teach under the syllabus of the science and art department's directory, but register the examinees under the Whitehall code and the act. By this plan the science and art department grant is sacrificed, but expenses are defrayed by an increased claim under the Whitehall code, which is met quite legitimately though at the

expense of the ratepayer, by the rates. Thus higher-grade education is saved, but the ratepayer suffers from the Cockerton judgment. At the same time the school board successfully asserts the principle which it vainly fought for at the Cockerton trial, *i. e.*, that "there is no essential difference between the science and drawing of the Whitehall code and the science and art of the science and art department directory." Whereas, however, formerly to the rates and the board of education grants under the code was added the aid of the science and art department grant, now this last aid is withdrawn and must be made good by an increased demand on the rates.

Such being the state of affairs, the government has practically traversed the whole position by issuing a new minute (no longer called a "code") establishing evening schools and classes. The full significance of this minute is ably explained by Mr. H. Macan in the *Journal of Education* for August; but the leading points are embodied in the following preamble to his article:

> The board of education, taking advantage of the Cockerton judgment, have boldly adopted the recommendations of the Bryce commission, that continuation schools are "secondary" and not "elementary." This implies *control* by the secondary authority, but leaves the *management* in primary or other hands, as the commission also recommended.
>
> The minute divides the schools into two kinds. The main kind (Articles 1 to 20), is secondary, and is no longer "public elementary." Hence the Cockerton judgment no longer applies to this class; the school board rate (with certain exceptions) is not available; and the words "code," "obligatory," "standard," etc., are abolished as meaningless.
>
> The second, or subsidiary kind (Article 21), is given to school boards for the hardness of their hearts; if they reject the license of the bill, reject the proffered grants of the county councils, and stand (as Canon Barnett well has it) on their dignity, they come under the judgment, and get as their reward a puny, truncated, fifteen-year age elementary continuation school. No school board (*pace* Leeds and Gateshead) is going to persist in seeking this alternative; though the argument "we won't play" is being freely used in their parliamentary game of bluff.
>
> What does the secondary continuation school become [continues Mr. Macan], and what will it do? (1) *As a secondary school*, it passes from Whitehall to South Kensington jurisdiction, and loses any religious denominational character it may have had. (2) *As a school outside the code*, all those

financial-political restrictions introduced into the elementary school by way of regulating the proportions between imperial and local subsidies vanish. (3) *As a school under the "Directory,"* Clause VII at once applies. Every county council in the rural counties will at once become "managers" of all the schools, will pool the grants (of course largely supplementing them), pay lump sums to the local managers instead of grants per subject, and appoint for the rural schools peripatetic teachers of special subjects. (4) *As a school no longer "elementary,"* Section 1 (1), *a*, of the technical instruction act no longer applies. The adult scholars who have forgotten their "three R's," and require to be re-taught them side by side with practical and useful subjects, must no longer, as in the past, be excluded from the classes aided by the county councils. No duplication of classes, divisions into upper and lower, are any longer required, and the backward and the advanced are alike eligible for all the benefits of the school.

Into minor details we need not enter. Such is the present state of elementary shool affairs.

The University of London progresses slowly with its reorganization. In mere bulk of work, very little has been done; but the machinery of administration, after practically twelve months' deliberation, has at last been fairly started by the appointment of a principal and all but one of the higher officers contemplated in the statutes of the commissioners. After a keen contest between Dr. William Garnett, who was strongly backed by the technical education board of the London county council and the interests which it represents, and Professor Arthur Rücker, the secretary of the Royal Society, who may be said to have stood for the purely academic interests of metropolitan education, the latter was appointed principal of the university. The two existing officials, Dr. H. Frank Heath and Mr. Alfred Milnes, were promoted to the posts of academic and external registrar and two new posts, secretary to the senate and superintendent of examinations, were given respectively to Mr. Percy Wallace and Mr. W. K. Hill. The post of extension registrar is still vacant. With the aid of this enlarged higher staff the senate will endeavor to give effect this session to the flood of schemes poured out since last October by the various faculties, boards of studies, and other standing committees. The first important duty of the senate will be to settle the matriculation scheme for internal students, on the general

principles of which, *i. e.*, a minimum of compulsory and a wide option of facultative subjects, they have already agreed.

The consultative committee would seem to have nearly completed the two important pieces of work assigned to them by the board of education. They have sent in their report on the examination and inspection of schools. As regards the registration of teachers, they have, it is rumored, settled the qualification for admission to the register after the years of grace have passed, and have only to determine the method of registration in the interim period. It is probable that a university degree or its equivalent, in addition to a certificate of training, will be insisted on and that a small standing committee will be appointed to supervise the keeping of the register. Later rumors state there will be a dual register—Class A consisting of teachers who are qualified solely as holders of the government certificate; Class B, of teachers who possess a university degree, and in addition (after the years of grace have expired) a teacher's diploma. As, however, the report of the committee is private and confidential and its conclusions subject to modification—though this is improbable—by the board of education, no authoritative forecast of its contents can yet be given.

The report of the consultative committee on the inspection of schools has already borne fruit. After the usual English manner the first batch of inspections was "done on the cheap"—to use an expressive piece of slang—existing science and art department grant inspectors being employed with the aid of a few "casuals." The next batch of inspections, held in the county of Surrey, appears to have been conducted on more enlightened lines and gave general satisfaction. All efforts to combine with this work a school science inspection were dropped and the inspectors acted, in the best sense, as educational advisers. After the inspection the inspectors had interviews with the governors of the schools concerned, an excellent innovation likely to be productive of much good, and one which, it is rumored, may be largely developed. Ideally, the inspectorate should have consisted *ab initio* of a strong body of educationists, whose names would have inspired general con-

fidence. That, however, would have been eminently un-English. Accordingly it was only after the inspections mentioned above had been undertaken that a number of well-known names were announced as temporary and *ad hoc* inspectors. These include Dr. Gow, Mr. Arthur Sidgwick, Professor Withers, Messrs. F. E. Kitchener, H. Millington, G. W. Rundall, James Headlam, Mrs. Withiel, and Miss A. J. Cooper.

Since the announcements of these appointments, the first few batches of reports of inspection of secondary schools under the board of education act have been issued and sundry criticisms have naturally been evoked. Among these is a charge of meagerness and lack of breadth of view in the reports. Certain members of the consultative committee are therefore pressing for the appointment of a few permanent inspectors who are men of known eminence or long teaching experience. Meanwhile the Victoria University has appointed an inspecting board of its most eminent professors and teachers, and will probably endeavor to secure its recognition as a "university or other organization," as defined by the act, and thereafter obtain perhaps a monopoly of the inspection work in the north of England.

I come now to the vexed question of an education bill, or, to be more precise, a supplement to the education act which established the board of education and the consultative committee. That act deliberately omitted to create any local authority, and the present agitation is concentrated on the effort to obtain either some local authority appointed *ad hoc*, or the recognition of county councils, duly leavened by experts, as the local authority for education, or, *faute de mieux*, some *modus vivendi* between the school boards and the county councils. The bill of 1900, it will be remembered, was swallowed up in the vortex of the general election last year. The bill (No. 1) of 1901 was "suddenly and unexpectedly" dropped and replaced by a minor (No. 2) bill intended merely to obviate the *impasse* created by the Cockerton judgment. The ostensible reason for dropping bill No. 1 was that it could not have been passed till August, when, in the natural course of parliamentary affairs, there would have been no quorum. The real reason, there can be little

doubt, was the constitutional indifference of the government to a question which has never counted as a factor in the verdict of the polls. Seeing, then, that the bill is dead, it would be useless to discuss its details. But some comments on the general trend of its provisions may be historically and, in view of a big measure promised (as so often before!) for next session, prospectively interesting.

The broad principles of the defunct bill No. 1 are well put in a summary article in the *Journal of Education* for June, and there also will be found a critical symposium on the bill, the educationalists who sit in judgment being authorities on the various aspects of the bill which they treat. As the board of Education bill of 1900 was called a "blank cheque," so the first bill of 1901 has been named a "skeleton bill." As the bill of 1900 constituted a single central authority for all education, so the 1901 bill proposed to establish a single local authority for all education (universities excepted) in each district, and took the first step in this direction. But the education committee of a county or county borough thus created was new only in name, and was, in fact, nothing but the existing technical instruction committee, enlarged by the compulsory co-option of outsiders. The consequent abolition of the fictitious distinction between technical and secondary education "will be welcome as giving the county councils a freer hand." But if this single education committee means the ultimate absorption of school boards, or their relegation to the subordinate position of boards of managers, "it is clear that the constitution of the education committee must be defined by statute, and not left, as it was in the bill, for each county to settle for itself, subject only to the approval of the board of education. Instead of the two co-opted outsiders which would satisfy the letter of the bill, it must contain in sufficient numbers statutory representatives of school boards, representatives of university colleges and polytechnics, where such exist; representatives of other grades of schools, and teachers, private as well as public; and, lastly women representatives—not 'men *or* women,' as the bill had it."

In its financial aspect the bill may be considered retrogres-

sive. The residue under the local taxation act, 1890, was no longer ear-marked, but only "applicable for the purposes of education." On the other hand, the penny rate allowed for technical education was to be raised to twopence, and "any urban district might, presumably in addition to the county rate, raise a penny rate for educational purposes of its own."

Here the writer in the *Journal of Education* touches the essential weakness of this, as it was of the 1900 bill, the absence of compulsion, by which only the righteous are enabled to obtain salvation, and the sinners go unwhipped.

> What security is there that the less enlightened counties, which stand most in need of secondary schools, will use the funds created by the bill? There is no compulsion in the bill; no one is held responsible for the educational supply; the children of light will get more light, but the Philistines will be Philistines still.

But no one could have expected more from an opportunist government, whose policy is to secure its own safety in the constituencies by avoiding all tender toes, even at the risk of pleasing no one.

The bill, as it stood, enacts that "an educational authority shall not make it a condition of a grant that any particular form of religious instruction or worship is or is not taught or practiced in a school or college." Further, in all schools established or aided by the rates, there was to be a conscience clause. This provision is not strong enough to prevent denominationalists encroaching upon the interests of unsectarian education, and the slackness here shown is an obvious sop to the government's clerical supporters.

Lastly, the two clauses tacked onto the bill in order to extricate the department from the *impasse* created by the Cockerton judgment are paraphrased thus:

> Any school board which is now maintaining higher-grade and evening continuation schools in excess of its legal powers, may apply to the County Council for leave to carry on these schools, and, if leave be granted, may defray the cost of maintenance out of the school fund.

A bitter mortification for the larger school boards, for which the government will, doubtless, pay dearly at the next general election. Moreover, for a whole year from the passing of the

act (had it reached that consummation), no new continuation school could even be contemplated. This would have been a severe blow to the progress of the continuation school movement. Finally, here is the judgment passed by the writer mentioned above, on the bill as a whole. Refusing either to bless the bill with Sir Richard Jebb, or damn it utterly with Mr. Lyulph Stanley, he says:

> It clearly points the way to a promised land, though it stands shivering on the brink, and hardly crosses the borders. It creates a local authority for intermediate education which may prove in time to be the local authority for all education; but which may, on the other hand, do nothing, and even obstruct what is being done.

An impartial and, withal, a sane judgment, if not an enthusiastic nor a hopeful one.

But this bill No. 1 was suddenly dropped, as already explained, grouse shooting being at hand, and the government quorum rapidly diminishing, and replaced by a single clause bill (No. 2, as it is called) — not the enabling bill prayed for by the representatives of elementary education, but a bill confirming the Cockerton judgment, and making the county council the authority for continuation and evening schools. This bill No. 2 was forced through the house of commons, discussion being ruthlessly stifled. Its consideration in the Lords was, of course, a farce. But it is doubtful whether the bill will make much difference to the school boards, as in almost every case the county councils will agree to continue the *status quo* for twelve months. Some of the larger school boards threaten to discontinue their "Cockerton schools" rather than apply for permission to the county councils; but the need for beginning the winter session at once, if it is to begin at all, will probably ensure a truce of God for twelve months at least, during which the "Cockerton schools" will either "make their wills" or set their forces in array for battle.

I will close my letter with a reference to the unique and princely benefaction which has fallen to the lot of Scotland—two million pounds sterling from Mr. Carnegie, to be placed under the control of a body of trustees, with provision for modi-

fication of the trust to suit future needs. At present half the income is to go towards improving and expanding the universities in the way of buildings, professorships, and equipment. The other half is to be devoted to paying fees and otherwise maintaining university students. The distinctive feature of this benefaction is not so much its abnormal amount as the measure which that abnormality gives of the vastly increased importance now attached to education as a factor in national development. Could the world but see it, no object of philanthropic effort has a claim superior to that of education, whatever its grade, nor is there any seed sown on the face of the earth more likely to bring forth fruit in due season a hundredfold.

WILLIAM K. HILL.

GARDNOR HOUSE,
Hampstead, London, England.

WHAT THE TEACHER OF AMERICAN HISTORY SHOULD BE AND DO.[1]

UNDER the stimulus of the American Historical Association, the National Educational Association, and several of the more progressive state associations of teachers, great improvement has been marked during the past few years in the courses of historical study in American high schools and academies. From a condition where any sort of a place or no place was given for the study of history, that subject has now come to have a recognized and fairly definite position in the secondary curriculum; in most decent schools it may be said, having regard to all the conditions surrounding each school, that the study of history is beginning to come into its rightful heritage as a natural and necessary element in secondary education.

During the same period there has been a marked improvement, amounting almost to a revolution, in the quality and character of the text-books on the subject. We are now having text-books from the pens of trained historical scholars, in place of books compiled by professional literary hacks.

In two of the three prime essentials, therefore, for improved secondary teaching of history much has already been achieved though much still remains to do. In regard to the third essential, the teacher, less has been said, and while here too there has been a notable change for the better, still on the whole less has been suggested and less attained in the way of betterment.

The Committee of Seven in their report made some good general statements regarding the character of the teacher of history. The special societies and associations of history teachers in different sections and states are helping much in the uplift. But these associations are as a rule composed only of those who are already successful, at least reasonably successful, specialists in history and its teaching. The great body, the rank and file, of those who are today charged with the teaching of history in

[1] Read before the Michigan Schoolmasters' Club, March 30, 1901.

the secondary schools—and in this paper I have in mind mainly the work above the "grades"—are not yet touched directly by these active influences. The vast majority of those who are engaged in history teaching are also teaching other subjects and hardly claim or aspire to be called specialists in history. To these and to those who will follow them there must be brought a continuous pressure to better and higher work, to better and higher ideas and ideals.

What will be said in the few minutes at my disposal is based in the main on three kinds of data: (1) Information and suggestion drawn from the many books, reports, papers and discussions on the teaching of history that are the more or less common property of all; (2) a fairly intimate acquaintance for twenty years with the schools and teachers of three of the leading north central states, of which it is safe to say that they are not below the level of the great middle West in educational ideals and attainment; (3) a very direct knowledge for the past fifteen years of the products and results of secondary teaching of history, and especially of American history, in Ohio, as measured by several thousand students who have come from the schools of that state to the state university. A study of the conditions under which their previous training had been gained, and of the difference between different groups in the accuracy and extent of their knowledge of American history, and of their interest in the subject, has led irresistibly to the conclusion that the secondary teacher of American history—or, widening the statement, the secondary teacher of history—is the most important factor in the problem of improving the secondary pupil's knowledge and conception of history.

That the last twenty years have shown improvement in the type of the teacher of American history admits no doubt, but there are still scores, probably hundreds, of communities and schools in these central states where it is held that anybody can teach this subject, with the usual result that nobody does teach it, though some one goes through the form of conducting a class over, not into or through, the subject. I know that it is still true of some places in Ohio and Indiana, and I believe it still

true of some otherwise quite respectable places in Michigan, that American history teaching has about as imporiant a place in the public schools as it had say thirty years ago in this very city in Michigan where as a grammar school lad I received during about one-half of one school year the only instruction in the subject which either the city schools gave or the University of Michigan offered below its senior year. This half-year's instruction was at the hands of one of those over-worked, undertrained, and, of course, underpaid women who welcomed the class in history not because she was full of enthusiasm and stimulating inspiration in the history of her country, but because she could sit before the class with book open, and without any appreciable mental effort easily determine by eye and ear whether the poor urchins and lassies in their parrot-like repetition of memorized paragraphs wandered from the straight and narrow path along the printed line and adown the printed page. I well remember that if fancy or imagination tempted us to embellish our narrative or to dress the naked and oft unlovely facts of history in real, live, human language we were ofttimes brought back to a sudden realization that history was stern and serious business, not to be trifled with or profaned by dilution or childish speculation.

> Ours not to reason why,
> Ours but to make reply.

Looking back to that class I know that it was there that the thought first crossed my youthful mind that I should like to become a teacher of history just that I might try to teach it differently, and to see if history had to be so dead, teachers so lifeless and pupils so uninterested. Yet of that same kindly-souled, inefficient teacher, like many another since and now, it might truly be said "She hath done what she could." She was only an instance of the oft repeated and always futile attempt to fit the square peg into the round hole. Now-a-days the misfits of this sort are far less common relatively, yet so numerous as to eave it still a very live problem what the teacher of American history should be and do.

In directing attention to the personality and the activity of

the teacher of American history we may start with the premise, now fortunately not open to question, that the purpose of the study of history is not the acquisition of facts, nor does its value lie in the knowledge of facts as such; its purpose and its value are in the power to apply and to use those facts, to trace fact back to cause, and consequence back to force, to identify and group like causes, similar facts and analogous results. American history or any other history cannot be memorized; it must be analyzed into its causes, facts, forces, principles; it cannot be recited, it must be discussed.

The teacher of history must then possess certain special attributes and qualities of mind, temperament, character, and training. The higher the degree in which he or she possesses these attributes, some of which seem to me innate in the successful teacher, while others are the result of training, the greater will be the measure of success.

In probably no other field of teaching do the personality of the teacher, his mental and temperamental traits and habits, count for more in his professional success—that professional success which is measured not by notoriety and promotion, but by the kind and amount of knowledge, power, and enthusiasm which the pupils have acquired as the result of the teacher's labors. So I would dwell first on the natural personality and temperament of the teacher.

1. He must be honest—morally honest, intellectually honest, politically honest. Morally honest in the sense that he will not permit himself to draw or to use or to approve any conclusions which he knows are made plausible only because he has omitted certain factors in order to make his thesis seem the stronger; intellectually honest, in that he will compel himself to search for and use all his facts and factors even though he foresees that they may lead him remorselessly to conclusions and views and positions that he does not like to reach; politically honest, in that he will not permit party or race or national prejudice to overshadow and dim his reason and judgment and give a bias to that which he imparts to others in the name of truth. He may, as a teacher, be an advocate only of that which has

been proved; a partisan only of that which is irrefutable. He must be of those who know no retainer except in behalf of the truth.

2. He must be either by nature or by cultivation an enthusiast, sanguine and optimistic. An intellectual and mental dyspeptic whose disease results in a chronic carping criticism has no call to teach American history. In the long run there is infinitely more good than evil in the world, and he who cannot or will not see this, who is constantly harping on the minor strings, bringing out the discords, the littleness, the meanness of life and humanity, or who has a tendency in that direction is no fit person to teach anybody anything anywhere, least of all to teach to the youth the story of our national life and progress. Faith, not skepticism, courage, not cowardice, the noble, not the mean — these are the keynotes of character we are seeking.

3. The teacher of American history must be possessed either by nature or by training of a goodly power of imagination. By this I do not mean that he may ever draw on his imagination to supply his lack of information and fact. I mean rather that power which will enable him on the basis of fact and knowledge to fill in the picture of past scenes, future conditions, or distant movements; the same kind of power which enables the archæologist with a few bones of an extinct species of animal before him to describe for others the entire animal of which these bones were once a part; the power, changing the figure, to project one's self back into the environment of which a given event is a part, to see things as they seemed to those who were then alive, and to describe them as thus viewed.

4. He must be sympathetic. The person who has not a large fund of human sympathy was not intended by an all-wise Providence to be a teacher of history, the subject which deals at every stage with human conduct, weakness, temptation, virtue, foibles, failures, triumphs. No one can rightly teach the history of his own country who cannot look at things from the standpoint of those who did the things of which that history is the story. To illustrate my meaning, while we study the history of our Civil War must we not recognize that there was a southern

side of the picture, and that viewed from that side many things look very different than from the northern side of the same picture? While we differ from our southern brother must we not see, must not our fund of human sympathy be large and deep enough to make us see and feel that the southerner was just as honest, just as sincere, just as honorable in his views and his endeavors as his northern, more successful brother? Or again, must not the teacher's power of human sympathy be strong enough to let him feel that the American loyalists during the Revolution may have been, probably were, just as sincere and honorable in their loyalty to their mother country and in their opposition to the revolutionists as were the patriots in their revolutionary efforts? We may condemn the Tories for their judgment, we must not malign them for their conduct.

In another and a different sense the power of sympathy must also exist in the teacher. He must be in sympathy with his pupils, must have that power which enables him to take interest not merely in the subject but in the learner; not the attitude which regards the pupil as a reservoir to be pumped full of unfiltered information by the teachers, but the feeling with which the parent sees the child grow under his care, or with which the farmer cultivates the field, pulling out the weeds, planting the seeds, adding the fertilizer, in order that the field may blossom into the highest productivity.

Thus far I have spoken of those natural traits which are specially essential in the personality of the teacher. I come next, and briefly, to some attributes that belong to the professional personality of the American history teacher.

1. He must be a student; one who is himself fond of study; one who knows how to study and who carries on him the impress of the student. I do not mean a recluse, a pale-faced, sad-eyed, melancholy "dig," but one whose mental habits are those of the systematic student.

2. He must be indefatigable, unwearying and unwearied in his zeal both as a student and as a teacher. However otherwise it may be with arithmetic or geometry, for example, it certainly is true of all history and not least of American history that the

teacher can never with truth say or feel that he knows the whole subject, that he needs to make no further investigation to master it. Persistent, unwearying study with the full consciousness that the further he probes the further he must keep on probing, must be the mark of the true teacher here.

3. He must be wide-awake to current events and politics; keenly alive to the history that is each day making in this broad country. The politics of today becomes the history tomorrow, and even while things are doing, in their very doing they illustrate and typify much that has occurred before. The keen-eyed live teacher sees at once the striking parallelism of events in today's doings with those of a generation ago under not dissimilar conditions. He notes, for example, how marvelously alike are the intrigues and scheming underlying the revolution and annexation of Hawaii, with the revolution and annexation of Texas a half century ago; he is quick to study and explain the Texas movement by drawing on his pupils' interest in the Hawaiian episode. Or, again, he is quick to appreciate that with the "benevolent assimilation" of the Philippines we are for the first time in our history forced to look at colonial relations from the other side of the relationship. He sees and utilizes the fact that hitherto we have sympathized only with the colonial side, whereas now we must begin to look at matters from the side of the home country also. He sees and will make his pupils see that if United States taxation of Porto Rico and the Philippines is right, then England's taxation of the thirteen colonies could not have been wholly wrong; or, reversing the statement, if England's colonial taxation was altogether wrong, then American taxation of Porto Rico and the Philippines cannot be wholly right. Thus his judgments and his pupils' ideas are rectified and clarified by these illustrations and comparisons.

4. He must be a good talker and story-teller; full of illustration, anecdote, reference, and allusion; able to put his point tersely, rapidly, clearly; ready to talk to his pupils from the fullness of his knowledge; yet not over-fond of hearing himself talk.

5. He must be well-versed in the literature and in the his-

torical geography of this country. He should know from personal visits or from careful and accurate descriptive accounts the great historic spots. He must be able to give to history its setting of habitation and place. History has been made by real men and women in a real world, not by imaginary beings in a phantom world. So the teacher must be able through the living literature of each period and the actual scenes where history was made to make it real to his pupils.

6. He must be or become the kind of teacher who can fill his pupils with zeal, enthusiasm and love for the subject; he must strive to be that all-too-rare being, the "inspiring" teacher — the teacher who can awaken the interest of his pupils, lead them on to work for themselves, to become absorbed in the deeds, the persons, the forces, the factors of the great history of their own country. This is no doubt the hardest and most elusive of description of any of the traits of the teacher. Yet if he possesses in fair degree the traits that have been named earlier he will not fall far short of possessing this one.

The inspiring teacher is the one, not who does the work for his pupils, nor yet he who drives his pupils into work, still less is he that nondescript being often called the "interesting" teacher; he is rather the one who by his own personality and example and precept fires them with the zeal to inquire and to work and investigate and reason for themselves. Is this a commonplace? If so, its realization in our teaching is far less easy than its utterance.

I have left myself but little time to speak of what the teacher of American history must do as a teacher and to fit himself for his work. As I apprehend it, so much, first, middle and last, depends upon what he is, that if his personality is of the right type, what he will do is largely determined in advance and follows as a matter of course. Ability to teach, to guide, to inspire, to uplift, depends more on the individual than upon his specific knowledge. In seeking the teacher of American history it seems to me quite as important, perhaps more important, to ask, "What is he?" "What kind of person is he?" than "How much does he know?" "How long has he studied?"

If both cannot be had in one person I would far rather have the man possessed of the traits I have touched upon, than the mere storehouse of knowledge which often passes for an educated being.

Let us, however, consider briefly what the teacher should do in pursuit of his profession. It is assumed in the first place that he has done what will give him a good broad foundation knowledge of his subject; that he is a college graduate or its equivalent. Less than this the high school of the future cannot tolerate for this position. In the next place he should each year make himself master of some special period or institutional development in our history. He must do those things that will make him grow. The teacher of American history cannot stand still; he must go either backward or forward. Last year's knowledge will not do for this year's work. Again, he must cultivate the ability to draw out his pupils, to provoke discussion, to arouse and awaken power. He must cultivate the art of questioning and of criticizing. Lastly, he must cultivate, if he needs to, the art of being modest; cock-sureness of opinion and judgment, inerrancy of statement, knowledge and opinion, are the marks of the imperfect teacher; modesty, frankness, carefulness, the marks of the successful one. The teacher of history who assumes or thinks himself always right is very apt to be frequently wrong.

Of method and machinery and technique of teaching American history it is not my intention to speak. Given the right kind of a man or woman, the proper foundation of knowledge and scholarly habit, and the greater part of the problem is solved. Such a man or such a woman with these habits of thought and work will compel success, and his students or her pupils will not fall short in the race.

GEO. W. KNIGHT.

OHIO STATE UNIVERSITY.

THE EQUALIZATION OF THE REQUIREMENTS FOR ADMISSION INTO THE DIFFERENT COURSES LEADING TO THE FIRST COLLEGIATE DEGREE.

The scheme of studies which includes three or four years of instruction in Latin and two or three in Greek, together with the amount of mathematics, English, and history, which can be conveniently taught in connection therewith, may be accepted as the standard curriculum for preparatory and high schools, measured from the cultural point of view. The average student who has advanced through this course year by year to the close has attained to a degree of maturity, and has acquired a stock of information and habits of thought and study such that he may reasonably be subjected to college tasks and methods and exposed to the freedom of college life. This association has, during the past few years, been giving special thought to devising a plan adapted to the limitations of southern schools, by which those students who do not study Greek, and perhaps omit Latin also, should be advanced by like stages through a parallel course of equal, or approximately equal, cultural value. All are agreed, it would seem, upon the wisdom and necessity of inaugurating such a curriculum in the preparatory schools, but if it is to be expected of the schools that they shall bring all their pupils up to the same degree of culture, whether by the classical or the non-classical route, then the colleges should adjust their requirements for admission so that they will be equal for all the various courses, and the same as the requirements for graduation from the preparatory schools. Any other course would tend to the disorganization of the very system of preparatory school work which the colleges as well as the schools of this association have received with approval.

While it is very true that the requirements for the admission of candidates for a degree differ very considerably from institution to institution, that is not the point at issue here and now. Such differences can be entirely eliminated from this paper without affecting the present discussion, and the impulse to equalize them may be dismissed with no other ceremony than the expression of good wishes for its success. We are directly concerned with the different requirements for admission into the different courses leading to a degree in one and

the same college. A study of the catalogues of southern institutions shows a situation which may be thus briefly summed up: In thirty-eight colleges offering ninety-two separate courses leading to a degree, and distinguished from each other by differences in the requirements for admission, thirty-eight include Latin and Greek; ten omit both without any substitute whatever; nineteen omit Greek (or one ancient language) without any substitute; twelve retaining the Latin require a substitution for the omitted Greek; and thirteen require a more or less adequate substitution of other subjects for both Latin and Greek. A comparison of the catalogues of several recent years yields evidence of a conscious movement towards the equalization of these different requirements in some of the most representative colleges. This is a tendency which richly deserves to be encouraged and promoted, and it is the purpose of this paper to review some of the reasons for it, in order, if possible, to stimulate a more general interest in it. The old policy of unequal requirements is a short-sighted one for the colleges to pursue; and one which is also deleterious to the schools; while the new policy will help both and is thoroughly consistent with, indeed is even a necessary complement to, the purposes and past efforts of this association.

The old policy is a short-sighted one for the colleges to pursue. When a man has entered college after satisfying low requirements for admission, and has taken a relatively light course because of the excessive number of beginner's classes in it (being, however, the only ones for which he is prepared) and finally graduates with the degree which is offered for such a course, he is thereby certified publicly and forever to be a man who has had less than the maximum advantages at college. In individual cases the stigma, for such it is, however slight, may be unwarranted. One man may make better use of inferior advantages than others will make of superior opportunities. But there is justification for it on the face of the facts, and it is notorious that it generally attaches. The writer has had to contend against it in dealing with students whom, not from lack of previous training but from consideration of their tastes and aptitudes, it seemed wise to guide into a scientific course. Surely a college is short-sighted which causes that some of its alumni shall look down upon others and that these others shall have occasion for shame before their brothers and the public at large. The policy involved actually presents a motive to those who really have most need of the college training to abandon half-used the opportunities for an education which they have.

It is sometimes said by the colleges in justification of their course that it is followed from the noblest motives and the highest consideration of public welfare. There are ambitious and capable young men with such poor local educational advantages that their natures will be dwarfed and the public be deprived of their best services unless the college shall open its opportunities to them, poorly equipped as they are to enter. Such cases may at one time have been more frequent than they are now. There still may be individual cases which seem deserving of some concession. But it is not the past and the individual case; it is rather the future and the general policy which commands our consideration in this connection. Is it the function of the college to hold itself ready to supplement poor local school systems, wherever they may appear; or is it not rather its function to pursue such a policy as will foster good schools everywhere? But these two policies are mutually contradictory. One must be adopted and the other will be opposed. Now, if the argument in favor of the former is good for anything at all it would lead the colleges to offer beginner's Latin and especially beginner's Greek. But that point has already been fought and won. The premise on which this paper is based is the established fact that enforceable and actually enforced requirements for admission into the classical course are higher than those for entrance into the scientific course; and further, it is the determined policy of this association to exert every possible pressure upon the schools for their improvement. Now where there are already considerable and growing facilities for acquiring a preparatory-school training in the classical course, it cannot be from lack of schools, but merely from lack of broad equipment that the deficient preparatory training for the scientific course arises. This brings us back to the alternative stated a moment ago. Either the colleges must use their resources in doing the work of the schools, or bring such pressure to bear upon the schools and the constituency which supports them that they will do it themselves. The college that pursues the one policy will surely win the lasting gratitude of some deserving individuals, and may make a specific contribution to the public service. But the other policy is feasible, is consistent with and an essential complement of the policy already adopted toward the preparatory classical course; and the college which follows it will leave the lower field to parties who are capable of exploiting it fully and will have its resources free for seeking equal honors in its own peculiar fields.

Financial necessity and the necessity of making an imposing exhibit before the state legislature or the denomination is the secret motive which impels many colleges to strive for numbers even at the sacrifice of scholarship. But here, too, a short-sighted policy is set over against a broad, far-sighted one. Shall the college get its students wherever it can, with little regard to their state of preparation or the ultimate consequences of its policy? or shall it by fostering the preparatory schools at once raise the grade of candidates for admission and increase their numbers? Whatever moral courage it may take to make the choice and bear the temporary sacrifice, it is plain what reason dictates. Surely, no one can show that good preparatory schools have had the tendency to decrease the number of students who go away to college. Indeed, the plain fact of observation is that the number of college students has been rapidly increasing in the region of our country where the best preparatory schools abound; and it would take a great deal of temerity to argue that the increase had taken place in spite of the influence of the schools; for the very atmosphere of the preparatory school, manned as it is by teachers who are themselves college graduates, is calculated to develop ambitions in this direction. Whatever some people in the South may have to say against the policy of free public high schools with first-class equipment, it is not for the college man to object to them. It is for his interest to encourage them.

But if the policy is short-sighted from the standpoint of the college, it is deleterious to the interests of the school; and the schoolmen have reason to be active in opposing it. This point needs no elaboration. It would require merely a restatement from the schoolman's point of view of many of the arguments just made; and more than likely that has already been done by most of us mentally in passing. If the college enters any portion of the field which belongs to the preparatory school, in just so far it diminishes the strength of public sentiment which is interested in the school and robs it of its sustaining patronage and financial support.

But it is especially and peculiarly in the difficult problem of properly grading the preparatory-school work that the lower requirements for admission into certain college courses affect the schools harmfully. If some pupils are pursuing Latin and Greek and the other subjects commonly associated with them, while other pupils omit one or both of these studies, it is very important that the latter class of pupils should have some substitute for the omitted work. If they do not,

they will waste their time and, what is worse, learn habits of idleness, a result which no honest teacher can contemplate. One method of supplying the deficiency may be found in advancing the pupils more rapidly in the fewer subjects which they are studying. This will necessitate the organization of new classes and an increase in equipment and teaching force, and, besides, it will result in shortening and narrowing the course and in making the pupils ready for the subjects concerned at a relatively immature age. However much the pupil may welcome this, and however much the college may invite it by low terms of admission, it is not the course which the schoolmaster, apart from any material or personal considerations, will plan for the best welfare of his pupils. Another method is to add new subjects or pursue the old ones further until an equivalent is provided for the omitted subjects. It will require no increase of teaching force and equipment over the previous plan. It is the plan which appeals to the schoolmen as the one eminently wise; and it is the one which has met the approval of this association as it was presented in the report of the Committee on Program of Studies for Preparatory Schools two years ago. Such influence as the individual college possesses — and on the schools which are its feeders its influence is a vital force — will be exerted against the best interests of the school and its pupils if it maintains a low standard of admission to any of its courses, while its influence will be uplifting if it adjusts its requirements for admission to the work which a preparatory school can do with a model curriculum.

If there has been any truth in what has been said and any virtue in the manner of its presentation, the propriety, the timeliness, and the importance of discussing the question in the presence of this association must be apparent. The purpose of this association to unify and develop the system of higher education in the South is a great and noble one. Encouraging progress has been made in several directions. Of late the association has been much occupied with the question of equalizing the amount of work required for the various college degrees, on the one hand, and, on the other, with the problem of broadening the preparatory-school curriculum. But the desired results in both of these directions will be jeopardized if the requirements for admission into the different courses of the same college are unequal. It is hoped that the question presented briefly in this paper will meet with the consideration which its intrinsic and strategical importance merits.

NOTE.—In the colleges named below the maximum requirements for admission to any course leading to a degree are those in the course including both Greek and Latin:

Alabama, University of
Arkansas, Hendrix College
Georgia, Emory
University of
Mercer
Kentucky, Central
Centre
University
Wesleyan
Louisiana, Centenary
Tulane
Mississippi, Millsaps
University of
Missouri, Central
Drury
University of
Washington
William Jewel
North Carolina, University of
North Carolina, Trinity
Wake Forest
South Carolina College
Wofford
Tennessee, Cumberland
Grant University
University of the South
Southwestern Baptist
Southwestern Presbyterian
University of
Vanderbilt
Texas, Baylor
University of
Southwestern University
Virginia, Emory and Henry
Hampden-Sidney
Randolph-Macon
Randolph-Macon, Woman's College
West Virginia, University of =38

Of these colleges the following offer a course leading to a bachelor's degree in arts, science, or letters, which may be entered upon without preparation in Greek or Latin, or any substitute for them:

Alabama, University of
Georgia, Emory
Kentucky, Central
Mississippi, Millsaps
University of
South Carolina College
Tennessee, Cumberland
Southwestern Baptist
Southwestern Presbyterian
Texas, University of (now changed) =10

Of these same colleges the following offer another course leading to a degree, which requires preparation in Latin, but which may be entered upon without Greek or any substitute for it:

Alabama, University of
Arkansas, Hendrix College
Georgia, Emory
University of
Mercer
Kentucky, Central
Centre
Missouri, Central
Drury
Washington
Missouri, William Jewel
North Carolina, Wake Forest
Tennessee, University of the South
Southwestern Presbyterian
University of
Texas, University of (changed)
Virginia, Hampden-Sidney
Randolph-Macon
South Carolina College =19

The following offer a course leading to a degree which may be entered upon without Greek, but with an adequate substitute:

Kentucky, University (one year each of German and French).
Wesleyan (one year of German for one year of Greek).
Louisiana, Centenary (at least one year each in German and French, for two years in Greek).
Tulane (United States history and ancient history for two years of Greek).
Missouri, University of (one year in history and one in science for one and one half in Greek).
North Carolina, University of (for one ancient language, two years of one modern language or one of physics).
Trinity (one year in one modern language for one and one half year in Greek).
South Carolina, Wofford (one year of German for one year of Greek).
Tennessee, Grant University (two years of German for two years of Greek).
Vanderbilt (two years of one modern language for two to two and one half of Greek. Beginning with 1903 two years in physical geography or . . . . . will be added).
Texas, Baylor (solid geometry and one year of modern language for two years of Greek).
Virginia, Randolph-Macon Woman's College (the equivalent of one college year in French or German for Greek).=12.

The following offer a course leading to a degree which may be entered upon without preparation in Greek and Latin, but with a more or less adequate substitute for them:

Arkansas, Hendrix (physiology).
Georgia, University of (one year of German for two years in Greek and Latin).
Kentucky University (100 pages each of easy French and German).
Louisiana, Tulane (two years of one modern language and United States history and ancient history for four years of Latin and two years of Greek).
Mississippi, Millsaps (political and physical geography and American history).
Missouri, University of (one year of history, two years of a modern language, and two of science for three of Latin and about two of Greek).
North Carolina, University of (two years of one modern language and one of physics for three and one half of Latin and one and one half of Greek).
Tennessee, University of (advanced algebra or solid geometry and some subject amounting to one year's work in United States history, physics, botany, modern language, etc., in place of Latin and Greek).
Vanderbilt (two years in one modern language and physical geography and one from the following: elementary Latin, a second modern language, or science, or history, to go into effect in 1903–4).
Texas, University of (beginning with September next, a given number of points will be required; but in the valuation of subjects Latin has perhaps been undervalued).
Southwestern University (two modern languages for two years of Latin and one of Greek).
Virginia, Emory and Henry (one year each of French and German for two years of Latin and one of Greek).
West Virginia, University of (out of 77 courses arranged in groups 39 are required).=13.

F. W. MOORE.

VANDERBILT UNIVERSITY.

SUBSTITUTES FOR LATIN AND GREEK IN ADMISSION REQUIREMENTS.

When we are told that a young collegian has made a broad jump of twenty-two feet, we know that the conditions under which he made the jump are practically the same, whether he is from the North, the South, the East, the West, or some intermediate point of the compass. But, when we are told that the same young fellow has taken his bachelor of arts, bachelor of science, or his doctor of philosophy degree from some institution, then we cannot generalize as to what he has learned, or has had a chance to learn. The degree may be a help or a hindrance; it may indicate scholarship, or it may not; it may be a badge of honor, or a mark of infamy. We can tell nothing at all about it, until we look into the particular case, and see what it represents.

All this, simply because a degree at one place is not the same thing as a degree at another. We would clearly enunciate the proposition that the same degree should represent the same amount of preparation for college and the same amount of work in college; that it should indicate a like amount of culture, study, and thought. In other words, when you hear it stated that a man has a bachelor of arts or a bachelor of science degree, you ought to know just what he has had a chance to learn, at least in a broad sense; that the required work for this degree should be the same in a Tennessee college as in a Massachusetts college. We hear so much said about "varying conditions and environments," and a weak degree justified on the plea that "our surroundings require us to do this." I have no patience with the argument; it is not a necessity that a school dub a man bachelor of arts or bachelor of science, and it should not do so, unless it can give him a worthy one.

I should be glad indeed to have this association say that, if an institution cannot give a degree based upon certain conditions, it will not place that institution upon a par with schools that give a degree representing more culture, more thought, and more length and breadth and depth of scholarship. Just say frankly that, if a college cannot give as good a degree as this association thinks it ought to give, it will not be recognized by the association. Enter in your own class.

I have wondered many times at the conception some of our southern colleges seem to have of the whole degree business. In many

places the giving of degrees amounts almost to a fad. Almost every one-horse-power college thinks itself prepared to give a bachelor of arts degree, and if a bachelor of arts degree, still more a bachelor of science degree. The whole subject seems shrouded in mystery. Only last July, here on the mountain, a graduate of an institution which has graduated more pupils than any other in the United States, in discussing the doctor of philosophy degree, gravely argued that a small college could give as good a doctor of philosophy degree as any university in the land; that no college had so meager an equipment that it could not afford to buy Plato, Aristotle, and all of the great philosophers, and that with these books a pupil could be given as good a doctor of philosophy degree as possible. The wise reasoner has attached to the name A.B., A.M., LL.D., M.D., Ph.D. But we are not dealing with colleges of that type, but with those that really have it in their power to do good work and to direct educational thought.

The vagueness of thought with regard to the bachelor of science degree is well illustrated by an incident that occurred a few years ago. It took place in a church school in the state of Missouri, a collegiate institute, whatever that may be. The president was a bachelor of philosophy from a small college. He stamped his initials on his stationary in three capital letters, punctuating them as if each of the three were an abbreviation. Just before commencement this distinguished gentleman called one of his teachers to his office and asked whether he thought a certain boy who had studied bookkeeping for one year, had had a year in physics, one in German, and one in geometry should have a bachelor of arts or a bachelor of science degree. The teacher insisted that he should not have anything awarded him, but the president conferred a bachelor of science degree upon him. This is not much worse than the view held by many of our southern colleges today. The bachelor of science degree seems to be considered as something intended to reward the efforts of the poorer students, or of those who do not care for a bachelor of arts degree. Where the meagerness of material equipment and the consequent lack of teaching force renders it impossible for the college to give one well-defined bachelor's degree, it certainly ought not to attempt to give two.

Coming down more specifically to the bachelor of science degree, let us see what preparation is required before the matriculate can enter upon the work leading to a reputable bachelor of science degree, and then let us see what he has to do before he can win the degree. Then let us contrast that course with what we find usually given in the South. Take the bachelor of science of the University of Chicago.

First, for admission: credits are reckoned in units, fifteen units being necessary. The recommended grouping is as follows:

Cæsar and elementary prose	2 units
Virgil, Cicero and advanced prose	2 units
Greek and Roman history	1 unit
Algebra to quadratics, algebra through quadratics, plane geometry, solid geometry	3 units
English	2 units
French and German, or French or German	3 units
Physics	1 unit
Other science	1 unit

As I said, this is the grouping recommended, but as the student is likely to follow the line of least resistance, when he has a chance to do so, there is also a required grouping, which prevents him from being too much able to take "snaps." This is the required grouping: history, physics, and one other science, 1 unit each; mathematics, 2½ units; and English and Latin, 2 units each, making a total of 9½ units, the other 5½ units being taken from certain lists prescribed. They are called elective, but the election is so much restricted as to show the poor fellow right at the start that election doesn't really elect after all.

Now that he has entered upon the bachelor of science course, let's see what he has to do to carry it: The work of the first two years is in what is called the junior colleges. The amount of work required in any junior college is eighteen majors, besides elocution and physical culture. The major is the unit of work, and consists of twelve weeks' work, five days a week. The junior college of science (leading to degree of bachelor of science):

French or German	3 majors	Public speaking, two hours a week during two quarters.
English	3 majors	
Mathematics	3 majors	Physical Culture, four half-hours a week.
Science	6 majors	
Elective	3 majors	

The Work of the Senior Colleges.—The last two years leading to the degree of bachelor of science are spent in the senior colleges. The amount of work required in any senior college is eighteen majors. This work is elective, within certain limits, limits so narrow as once more to satisfy the student that election does not elect. The man who gets a bachelor of science degree in this way leaves college with a profound respect for the degree.

I have carefully examined the catalogue of every southern college of any prominence, and find that we have no requirements for entrance and none for work in course that compare at all favorably with those

given. I find, too, that many schools in the East have requirements as strong. Many of our schools have no language save English required for entrance upon the bachelor of science course, and few require more than one language in course. In two or three cases those with the weakest requirements for entrance, and poorest course of study, give a doctor of philosophy degree.

Two of the best bachelor of science courses are those of Vanderbilt and Trinity. Vanderbilt at present requires preparation in algebra through quadratics, plane and solid geometry, English, United States history, geography, and a modern language. It proposes to add in 1903 one science, and either elementary Latin, a second science, a second modern language, or a second history.

Trinity has no bachelor of science degree, but has a bachelor of arts degree, with a scientific bias. It requires for entrance, American and general history, algebra through quadratics, four books of Cæsar, four of Cicero's *Orations*, six books of Virgil, and four books of the *Anabasis*, or one year of French or German. The course is one of four years, the required studies being mathematics, Latin, English, Greek, German, or French, history, physics, biology, and chemistry. It seems to me that Trinity has a magnificent opportunity for doing undergraduate work of high grade, with her liberal endowment of three-quarters of a million dollars, her faculty of twenty men, and with fewer than two hundred students. May she have the wisdom to confine herself to this work.

These are two of the most comprehensive courses offered, but they are sadly inferior to those of the East. I am sure than one cause of this is our squandering of our energy upon graduate work, when we should be trying to give our men decent undergraduate courses.

The remedy is a simple one. Let us insist on more exacting requirements for entrance, making the bachelor of science course a distinctive one. Let us abandon the idea that it is a solace given to poor students, and make it really stand for something.

W. D. Mooney.

Mooney School.

THE PROBLEMS OF THE SMALL COLLEGE IN THE SOUTHERN STATES.

Apparently everyone who has read or spoken so far at our meeting has been doing "laboratory work" on college catalogues.

This paper is based on a careful study of all the southern catalogues I could get — forty-four in all — representing probably two-thirds of the colleges for white students, and more than that proportion of the students, in the states which formed the Confederacy, except Virginia.[1] The catalogues most in circulation represent of course the strongest and most enterprising institutions, so that averages and conclusions must be taken as making probably a better showing than a complete list would furnish. The catalogues were supplemented by the figures of the commissioner of education. It is to be noted that these are made up from the statements of the heads of the institutions, who are interested to make here as well as in the catalogues as good a showing as possible, and therefore the actual state of things is certainly not better than the figures show. Northern readers need to be informed, and southern ones to be reminded, that the commissioner's totals and averages include the figures from negro institutions, that must be revised in order to show the facts concerning the higher education of the white race, with which alone this association is concerned.

The facts sought are those concerning the college proper — the kind of institution which gives the higher liberal or humanistic education, as represented by the old bachelor of arts degree, with whatever modern variations, such as bachelor of philosophy or bachelor of literature, still mean general culture, and not, as quite often bachelor of science does, special preparation for a scientific profession. The latter is to be reckoned as professional study, as properly as that in a law or medical school.

The usual college course is four years. Supposing that the work is strictly prescribed for all students of the same class, that there is no division into sections, that each student has fifteen hours a week in the class room, and each instructor the same; then four professors can

[1] Virginia was omitted at first for an extraneous reason (not being represented on the board of the University of the South, in the interest of which the work was begun), and not added afterwards because the conditions there differ somewhat from those in the other states.

do the work. Supposing there are one hundred students, each of whom pays a tuition fee of $50. I find from questioning a considerable number of college presidents and others, that of the total income of a southern institution, the average proportion which is available for salaries is about two-thirds. If the college has no other source of income, the salaries of the four professors will be $833.33.

Let no one laugh at the poverty of this picture. Nothing better than this is shown by a surprising number of southern catalogues. A state of things represented by doubling these figures — eight professors, 200 students, and 120 hours a week of instruction, is well above the average of our forty-four colleges.

The latter basis, be it said, is a quite respectable ideal for a small college. Such a college, with proper material conditions, can do very effective work, and handle additional students to the number of a hundred or more without any radical readjustment.[1]

Such a basis allows considerable work in sections in the lower courses, and election in the upper. A relatively small endowment, if nothing but legitimate college work is attempted, will add enough to the tuition fees to pay living salaries. With modest but adequate buildings, library, and laboratories,[2] free from debt, a productive endowment of $200,000, and a $60 tuition fee, really collected from 200 students, a college can claim to be on a sound financial basis. Without some such conditions in the way of endowment, faculty, and students, the work of a college is more or less hampered.

It may seem incredible, but it does not appear from the statistics that a single southern college is up to this modest standard. A few have between two and three hundred thousand dollars endowment,[3] but very few others have half that, and very many have none at all to speak of.

In reckoning the number of officers of instruction, it is often difficult to get the real facts, because the college professors so often give instruction in other departments; oftenest in the preparatory, but also

[1] The average number in the twelve smaller New England colleges for a recent year was 286.

[2] It has been brought out in the discussions at this meeting that no extensive laboratories are essential to the proper teaching of science where no research work, and no preparation for scientific callings, is attempted; it is merely necessary that the student shall have opportunity to see and handle and weigh and measure for himself, and this can be done with a very inexpensive equipment.

[3] For the use of the college department; some of the universities have more for all departments together.

in the professional. In very few of the colleges are there other instructors than the professors. Taking, however, the number of those professors who appear from the catalogues to be doing college work, the average for the forty-four institutions is eight; there are nineteen which have less than that number, and very few have more than ten. It appears, however, that the amount of instruction given is much less than the full time of eight men. The number of hours weekly is generally from 90 to 120. About 50 per cent. of the colleges are within these limits; 20 per cent. have more than 120 hours, and 30 per cent. less than 90. The average appears to be about 110. But the number of hours for each professor averages nearer twenty than fifteen; so that it is likely that the average amount of instruction given in a southern college is not more than the full work of six men.

The figure given for the possible salaries is also no fit subject for hilarity. It is too serious a matter. Apply to the commissioner's figures the two-thirds estimate mentioned above, and you get for the forty-four institutions an average of about $840; for ten state institutions $930, for the private institutions $750.[1]

In the matter of standards of instruction it is again difficult to get at the facts without much reading between the lines. I have assumed as a type a course beginning with the admission requirements considered by the association last year,[2] and giving four years' work for a literary degree. The chief test is the work of the freshman year. If, for instance, the freshmen are working on Cicero or Virgil, advanced English composition or literature, and solid geometry or advanced algebra, the work is up to the standard; if they are on Caesar, some of the English books required for admission, and plane geometry, it is a year below the standard, and so on. I went through the catalogues on this basis with great care, trying to make such compensations as

[1] Popular notions about college salaries are greatly exaggerated. For instance, divide the amount given in the Harvard treasurer's report as spent for salaries by the number of officers of instruction from the catalogue for the same year, and you get about $1,200; proportioned to the southern figures something like the cost of living in the two sections. It should be said, however, that the Harvard salaries do not so often represent the total regular earnings of a man settled down to his life-work, which would be regularly the case in the South.

[2] These may be briefly stated as the ability to write decent English, and acquaintance with some standard works in English literature, four books of Caesar, four orations of Cicero, three books of Zenophon, with Latin and Greek grammar, algebra to quadratics, and three books on plane geometry. Liberal substitutions and equivalents were contemplated, but the intention was to secure about the amount of school work and degree of maturity expressed by these units.

would be fair in each case, and arrived at the following results: About 40 per cent. of the institutions (representing probably somewhat more than 40 per cent. of the students) are within half a year of this standard: a very few a little higher, most a trifle lower. Another 40 per cent., including some of the strongest institutions, fall rather definitely into a class having a standard just about a year lower. The rest, while more scattering, will still reduce to a standard with an average a trifle over two years lower, representing after all some good work, with an apparent ideal of attainment which is sound so far as it goes.

The determining of the numbers of students was the original purpose of my investigation, and I have given more time and care to this point than any other. I wished to find the actual number of students who are regular candidates for a literary degree, excluding such scientific degrees as are of a professional nature.[1]

I actually counted or computed the number of such regular candidates in thirty-nine institutions; probably three-fourths of the entire numbers in our territory. I also estimated the probable number if our standard of admission were universally adopted — deducting the freshman class if the standard is a year low, and so on.

The total number, on the actual basis, was 3,784, an average of 94 for each institution. No college, in the year for which I had the catalogue, had 200 regular candidates for literary degrees. On the theoretical basis, the number would be 2,921, or 73 to each college. The commissioner's report gives 6,974 candidates for the bachelor of arts, bachelor of philosophy, and bachelor of letters degrees, of whom more than a thousand by actual count are in negro institutions. It is, then, more than probable that there are not more than 4,000 students in the southern colleges who could pass the association's admission requirements.[2] The work of an institution is finally measured, however, by the number of degrees conferred. Here the commissioner's figures are fairly reliable, and more satisfactory than the catalogues, which do not always report this item. The number of bachelor of arts, bachelor of philosophy, and bachelor of letters degrees conferred in our territory

[1] I finally came down to excluding all bachelor of science degrees, as there are relatively few of them given except in schools of technology, and those given in other schools are frequently an attempt to ride two horses at once by tacking on a liberal education to a professional degree, or *vice versa*.

[2] This is approximately the number in the twelve New England small colleges, which have a standard about a year higher, and not many more than at Harvard and Yale, where the standard is still higher.

was 817 for the year for which I used the report, of which over a hundred, according to Du Bois's "College-bred Negro," were taken by our dusky brethren and sisters.[1]

If every student finished a four years' course and took his degree, the number of degrees conferred would, of course, be 25 per cent. of that of candidates in attendance; it is as a matter of fact for southern colleges about 11 per cent.;[2] for the rest of the country it is about 20 per cent.

In the South also the number of irregular and special students is relatively larger than elsewhere. The number of preparatory and irregular students in the thirty-nine institutions was 3,028; assuming our admission standard it would be 3,921. The average number for those institutions which have a preparatory department is 126; some have over 300.

A good deal has been said about the smaller proportion of students in college in the South as compared with other sections of the country; but if you reckon with the native white population only, there is not so much difference. The ratio is about thirteen to seventeen. Very few southerners go North for their college education; I found less than a hundred in the catalogues of twelve of the largest northern colleges. This for the college proper, as defined at the outset; for professional and scientific students the relations are different. The ratio to the total white population, both of students and of degrees, is very nearly the same in both sections, and the northern professional schools, including technological, have literally thousands of southern students. A correction made on this account would possibly show that southerners lead the country in the pursuit of professional education, very much at the expense of the college; for many of those who drop out of the college course do so in order to begin in the professional school. In fact, considering that the college is also used as a professional school by those who intend to teach, the idea of a liberal education, without reference to a lucrative calling, seems to be out of fashion in the South.

Such are some of the facts. How do these facts bear on the problems of the small college in the South?

It must be evident that most of these problems may be summed up in one, namely, smallness. The elements of strength in an institution are, among others, material equipment (buildings, library,

[1] About 700 bachelor's degrees, each meaning at least two years more work, were given last June by Harvard and Yale alone.

[2] It is significant that for female students in the South it is less than 5 per cent.

laboratories), productive funds or other sources of income, numbers and quality of faculty and students.

In all these things the southern colleges are pathetically poor; and they are poorest in number and quality of students, which is the most important consideration of all, because the others are in a sense corollaries of it. There are two reasons for this. There are not students enough for the colleges, and there are too many colleges for the students. These two reasons are not quite identical in my mind. Both are results of the war, but in different ways. The former is indicated by the greater proportion in the South of professional and scientific students. The family habit of going to college for a liberal education requires not only material prosperity, but also a continuity of tradition. If this is broken for a generation the scholarly tradition suffers.

The southerner of the generation before the war was proverbially a gentleman and a scholar, and a fine judge of whisky and horses. In the generation after the war he had more to do with mules than horses, and was lucky if he got any whisky that called for discrimination. He is still profoundly a gentleman, unconsciously and inevitably; the war and its consequences gave great opportunities for the practice and development of human kindness; but he is just as unconsciously and inevitably a man of practical affairs rather than a scholar, and if you can get an expression from him as to his hopes for his son, he will probably say that he wants him to let whisky alone and know about electric railroads. He therefore sends him to study something which appeals to him as "practical;" if one of the old professions, then the sooner he can get into the professional course the better; if a new profession like engineering, that is "going to college;" if the boy cannot attain to such heights, he can take a "business course" in bookkeeping and typewriting, and that is "college" too, and "practical" at the same time. And the boy's mother and her friends, rejoiced that her boy is "in college," believe that he is getting the same thing, or something just as good, as if he were at Yale or Harvard. Do not the announcements of the institution where the boy is studying say or imply just that? We who know the distinctions often need to be reminded that to ninety-nine hundredths of the great Philistine world no such distinctions exist.

On the other hand, most of the colleges were founded or planned before the war, and when the post-bellum poverty came, they were loath to give up the work they had begun, and made untold sacrifices to keep alive and do the work they could find to do. Very little of

this was college work as I have defined it. Few could afford a liberal education, and there were no schools to prepare for college. The public high school as known at the North did not exist, and private schools and tutors were no more within the means of the impoverished people than a college course. So, as a rule, the colleges depended upon their preparatory departments for students and revenue, and became practically secondary schools. This supplied a real need. The South is a rural section. There have been, down to the present time, very few cities or towns with 5,000 white inhabitants, and without some such number there is no basis for a local secondary school. Boys must then leave home for secondary education, and if the institutions founded as colleges furnish it, to what better place can they go? That this state of things still exists to a large extent is shown by the figures given above regarding preparatory students.

It was imperative for most young men to get ready for their life-work and be earning money as early as possible. This led the professional schools to take students with practically no conditions of admission except willingness to come and pay the tuition fee, and thus these schools became formidable rivals of the colleges. All institutions, colleges and professional schools, including all sorts of normal, polytechnic, industrial, "business" schools, and what not, have competed for the only source of revenue — tuition fees. This has had a whole train of undesirable consequences, but what most affects the colleges is that it compels them to "keep their ears to the ground" for any apparent popular demand, and cater to anything that promises a few more fees. Besides, preparatory departments (which have not been by any means entirely bad), they have wasted energy in music courses, "business courses," and all the others mentioned above, as well as in poorly manned and equipped courses for the usual professions, to the great detriment and loss of dignity of the regular college work. An occasional success in such ways has led to the establishment of many unworthy mere money-making enterprises, and the legislatures have been very much at fault in chartering institutions which have no right to exist.

In the absence of a regulating authority, the state of things bears much the same relation to the well-ordered system of Germany, for instance, as that of a virgin American forest to a carefully managed German domain. The scientific forester does not recklessly destroy trees. Where a tree is growing, even if it is not of the most valuable sort, he leaves it unless it is in the way of a better one, for it may be

good for something; it has been recently found that even the black-gum can be used for paving-blocks. So with an educational growth; it should be so managed as to make the most of what is in existence.

Let us suppose that the traditional benevolent despot, having full power to establish, suppress, or change, and knowing, or having the advice of those who know, as much about the conditions as we do, should take the matter in hand; what would he do? In the first place, if he knew as much as we do, and no more, his first step would probably be to get complete and accurate information. He would appoint a commission with inquisitorial powers to get definite answers to such questions as these: How much property has your institution? How much debt? How much revenue, and from what sources? How many students have you at the middle of a given term, as regular candidates for each degree that you give? Where do they come from? How old are they? How many of them pay tuition? How many professors and other instructors have you? Just how much, and what work did each do last year? What sum did each receive for his work? Answers to these and similar questions would be called for for several years back, and the returns carefully tabulated.

He would then ask the heads of institutions: In what direction, and to what extent, do you consider changes desirable in your institution, or in the class to which it belongs; and what measures do you consider feasible to bring about such changes? He would get similar opinions from some representative set of intelligent men of affairs—say for instance the lay trustees of the various institutions. Having these facts and opinions collected and edited, he would proceed to adjust things so as to secure the best economy of work and coördination of effort, making the best use possible of all existing institutions.

It appears that all the students prepared up to the very modest standard proposed by the association could be provided for in about twenty colleges. At the same time, the catalogues show an average of 175 students in college and preparatory department together; and within a few years, as the country gains in population and wealth, a considerable increase can be expected. There is, therefore, work enough for all the institutions, only more than half of it is secondary work. This is, in its place, just as useful and dignified as college work. Indeed, if done frankly for what it is, it is infinitely more dignified than the same work called by a more high-sounding name.

Our despot would, therefore, probably select, through an expert commission, with due regard to present conditions of equipment,

locality, and relations to other institutions, twenty or so of the strongest to do the college work. He would see that they had adequate buildings, libraries, and faculties, and endowments sufficient, with what could reasonably be expected from tuition fees, to pay living salaries.[1]

In the weaker institutions which are living chiefly on the preparatory department, the college would be closed and the preparatory work strengthened by taking the preparatory students from those of the first set which had them, in exchange for the few college students in the weaker ones.

Furthermore, some institutions in which the college work is languishing because the scientific side is outgrowing it, could let their humanistic students go to the colleges, and they could be established and strengthened as schools of engineering and the like.

It cannot be emphasized too strongly that the modern scientific professions need just as long and thorough training as the older ones of law, medicine, and theology, and that a sound academic education, on proper lines of course, is just as advantageous a foundation in one case as the other.

Surely the age of twenty-one is the minimum at which a young man, both for his own sake and that of the community, should begin the practice of a profession. This gives eighteen or nineteen as the minimum for entering the professional school. Ought not the time up to that age to be spent, in every case, in academic study? And ought not the standard of admission to all professional schools to be such academic attainment as can reasonably be expected from a young man of good parts, working faithfully under good instruction up to that age? It seems to me that the failure of parents (upheld, it must be admitted, by too many of the professional schools), to realize the importance of this academic education, which it is the function of the college to give, is the greatest cause for the small number of college students in the South today.

Our despot would, therefore, undoubtedly take in hand the professional schools, and fix such standards of admission and graduation for them, as well for the colleges, as to insure that the whole work of higher education be well organized and coördinated.

The only despot who rules in our country is public opinion. This

[1] I have examined many programs for improving one part or another of the universe, and I never yet saw one which did not include a raise in its author's salary, or in the compensation for the kind of work he does; but with full knowledge of this tendency in human nature, I still venture to express the hope that these salaries would average more than $840.

ruler is rather slow to act on questions like ours, and does not always act in the most judicious manner; but he is always ready to listen to expert advice, and sometimes follows it. Besides the unorganized public opinion which, for instance, sends one young person in thirty to college in New England, as against one in a hundred in the South, there is the expression through legislation; which, if properly informed, could do much towards thinning and putting on a sound basis of growth our educational wilderness. For instance, some more agitation on the subject might induce some of our legislatures to prohibit the establishment of degree-giving institutions without adequate endowment, say $200,000 for an ordinary college.[1]

Another good idea would be to withhold the right to give the degree of doctor of philosophy from any institution which has not a round million for graduate work alone. There is a long paper to be written on this subject for our association; I have here only space to say that colleges should no more dissipate energy in the direction of graduate work than schools in college work, and that at present no institution in the South has an equipment which permits any great amount of graduate work without doing it at the expense of more legitimate college work.

There are many other ways in which legislatures may help, but one which is eminently in line with the practice of legislatures has been already suggested above. Why should not legislatures appoint commissions of expert educators to make the exhaustive investigation of facts which every one seems to be in need of?[2]

Another idea for the benevolent despot is the millionaire variety. Here I think the emphasis should be on the *benevolent;* there seem to have been cases where too much emphasis on the other word was unfortunate, though a little, intelligently applied, might not do any harm under certain conditions. Suppose, for instance, one or several of the rich men who could well afford to do it should set on foot the proposed investigation of facts, and should find a certain group of colleges in the same region, or under the same denominational control, or both, and say to them: "Drop your petty differ-

[1] Such a law recently before the New York legislature proposed a minimum of $500,000.

[2] It would seem from what was said at the meeting that various members of the association had spent an amount of time in studying catalogues and other statistics which, with the task properly organized and distributed, and backed up with a little money for clerical expenses, would have gone far towards covering the whole field of investigation.

ences and jealousies and let a disinterested commission organize your work on a better basis, and I, or we, will strengthen your endowments."[1] Can any one see any objection to such a course?

Or if some such individual or syndicate should undertake to stand for the whole task which I have outlined, so far as it should be found feasible; two or three millions would go a long way towards giving a sound basis to the whole college work of the South; would it not be better spent than the many more millions which have gone into what I have heard called "ornate caricatures of German universities" elsewhere?"[2]

There is not a college library in the South which has 30,000 up-to-date volumes, and there are many, in colleges whose work is to be taken seriously, which have not 5,000. If some millionaire with the library habit would give even moderately in this direction, would it not do more good than providing novels for grocery boys and factory girls?

It is the farmer's best field which responds soonest and in the largest measure to fertilizing and culture; and so, while negroes and "poor whites" cannot be neglected, there is still no more promising field in the South for judicious giving than that of the higher education. If nothing further were to follow it, the trifling sum required for the investigation mentioned would be a most welcome contribution to the cause, and I am sure the association would be glad to undertake the work if thus supported in it.

I offer these suggestions as better, because more systematic, ways of giving, than the usual one of a building here and a scholarship there, or even an institution which may not be really needed, out of personal whim or vanity or on the representations of interested persons.

Organization and intelligent study of facts are the watchwords of the times, and nowhere are they more needed than in our problems. And so, finally, coöperation on the part of the institutions themselves is all-essential. This association is a long step in the right direction, but

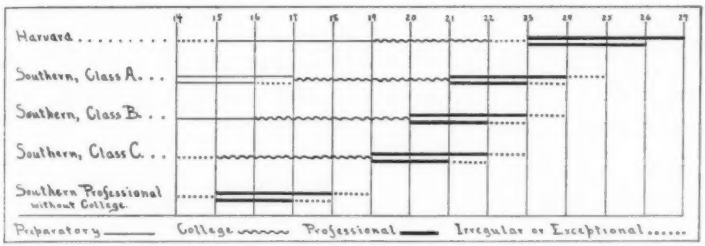
[1] Anyone can find in the commissioner's tables a group of six colleges, in three adjoining states, under the same denomination, or shades of it. They have together 585 students, and $375,000 endowment. The two strongest have 317 of the students, and $262,000 of the endowment, and buildings and equipment fairly adequate — the others, with one exception, being ridiculously inferior in the last item. The two strongest have no preparatory department; three of the others have, with 210 students. There are other weak colleges in the region which, if they would overlook denominational differences, would profit by a general reorganization.

[2] An institution could be named whose front steps cost more than the total endowment of any southern institution, except a few of the richest.

some basis should be found on which it can be extended to include all institutions for liberal education, and it should be in cordial understanding and sympathy with associations representing elementary and professional education.[1]

In neither legislatures nor private benefactors will support the proposed investigation, could not the institutions themselves, perhaps through this association, combine to undertake at least a preliminary canvass, which could at the same time be made an inquiry as to a satisfactory basis for a wider membership? There are already strong tendencies towards a coördination of work such as I have suggested; it would be a pity, if it were possible in the light of wider knowledge to do better, to take steps which must afterwards be retraced.

I will close by presenting a diagram which shows what, from my



necessarily incomplete facts, appears to be the state of certain aspects of the case. To show movements would require comparison of states at different times, a task which I have not attempted.

I have shown first the state of things at the oldest and strongest institution in the country. Here the average age of admission to college is nineteen, and of graduation twenty-three, unless, as is often done, the course is shortened to three years by extra work. The medical course is four years, the other professional courses three. This gives twenty-five to twenty-seven years as the age at which the young man goes into the hospital or office to serve his apprenticeship for regular practice. The college is fed chiefly by a set of old and strong schools, which carry the student as far as the college did seventy-five years ago, or as some of the southern colleges do now, for the bachelor's degree.

In our section Class A represents the 40 per cent. of the colleges which are at or about the association's standard. This is two years

[1] As a concrete instance, the Southern Medical Association is soon to meet. Could not our association send a representative or a memorial to influence them in the matter of raising their standard of admission?

lower than the Harvard standard, allowing boys to enter at seventeen and finish at twenty-one.[1]

I shall maintain that this is better than the Harvard standard. Academic training for professional students is a good thing, but Harvard has about two years too much of a good thing. You see that this Class A standard allows a professional degree at twenty-three or twenty-four, or even a year earlier with better work in the preparatory schools.

There of course is the difficulty. There are a few schools, mostly grouped in certain sections, which can prepare for this standard, but there is not a college in the South which is not obliged to make provision for students who cannot attain this standard, and who come in at a standard a year lower (roughly expressed by our old minimum requirements of English, history, and geography). Colleges which have no preparatory department take them as irregular or special students, or in some cases even announce a special year's work for such students.

Now the colleges which I have put in Class B, including, as I said, some of the strongest in numbers and endowment, recognizing frankly the fact that they cannot get the higher standard of preparation from their feeding schools, take their students at the lower standard, which they can get, and give the degree on four years' work from that point. There are not wanting those who think that such a course, allowing a year earlier graduation from the professional school than Class A, is high enough. It is a fact that a larger proportion of students finish the course in Class B than in Class A. This plan also leaves room for a well-organized, though short, high-school course.

Class C does not leave room for such a course. It includes various institutions which are too weak to do adequate work for the bachelor's degree, and ought not to give such a degree. Nevertheless, they are often doing work which is sound and fills a real place. They provide a modicum of academic instruction, with a token of its completion, for the class which is, and probably always will be, numerous, of young men who desire a professional degree at twenty-one or twenty-two.

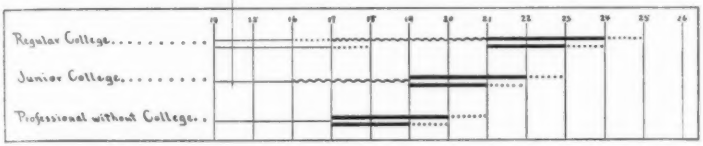
I add a line showing what is possible in the way of admission to the professional schools. Of course students do not actually enter at such a tender age, but they can reach the standard at that age, and

[1] It ought in fairness to be said that the actual average in both cases is raised by individuals who for one reason or another are belated in preparation. Boys do prepare in good schools and enter Harvard at seventeen, and our standard ought certainly to be reached at sixteen under favorable conditions.

ought to be kept out, whatever their age, until they are better equipped.

The second diagram shows some possibilities based on present conditions which, though perhaps not ideal, seem to me feasible and in the right direction.

The first feature is one on which everybody is now already practically agreed, but possibly my presentation gives it a little different aspect from that in some minds. I suggest that the colleges in Classes A and B unite on some compromise as to standard, and fix an admission requirement which shall cover what can be reasonably hoped for from the schools as an attainable ideal for the near future. I hope this will be as near Class A as possible, for the sake of giving the schools a good and sound curriculum, which will be of value to their gradu-



ates who do not go to college. This could, without doing any harm, be extended, in the case of strong schools, to cover another year and admit their graduates to the sophomore class in college.[1]

The colleges must still overlap work with the schools in the other direction, by taking students below standard from places where the schools cannot do the work, and giving them a year's work as irregular or special students, until they reach the standard. As the schools strengthen, this would tend to disappear.[2]

The second feature is to provide a legitimate field for very many institutions which are even now doing sound work, often in the face of great difficulties. They include colleges of Class C and some of Class B. It seems to me that their work would be condensed and strengthened if they were organized on a type something like what President Harper has discussed under the name of junior colleges. The course could be three years, beginning where Class B does now (*i. e.*, as far as the majority of the schools can go), and giving of course a diploma at the end, which would be distinctive and honorable, but would not

[1] In the same way, the strongest colleges could do a year's graduate work, and give a master's degree, which would be sought by those who intend to teach.

[2] Its disappearance might be hastened by treating such students strictly as on probation, and denying them the privileges of regular students, such as joining fraternities, playing on athletic teams, and the like, till they have passed the regular examination.

be miscalled a bachelor's degree. Such a course can be handled with less resources in every way than the more ambitious one for the degree; it would be more strictly prescribed, and would indeed correspond to the prescribed part of the bachelor of arts course, as it has taken shape in most of our colleges. Those of the graduates who desired further academic work, especially those who intend to teach, could go to the regular colleges for their last two years. Many who now leave college to enter professional schools would prefer such a course as this, and would possibly stay, in order to finish it, longer in college than they do under present conditions. Boys might also, as in the other case, as the schools improve, enter this course in the second year without any harm being done.

The third feature of the plan will, I think, meet with general approval, though very little attention seems to have been given to it heretofore. When we have a standard of admission to college, let us move heaven and earth to have it adopted also by the professional schools. This will strengthen the secondary schools as nothing else will, improve the quality of the professional students, indirectly help the colleges, and in the end cause no loss in numbers to the professional schools. They really ought to demand a standard as high as that of the diploma of the proposed junior college, but on the way to that the college standard of admission seems a perfectly practicable step.

E. H. Babbitt.

University of the South.

THE STRUGGLE FOR EQUALITY OF RIGHTS BETWEEN THE GERMAN GYMNASIUM AND THE REALGYMNASIUM.

NOW THAT the first steps towards the co-ordination of the realgymnasium and the gymnasium are made; now that the faculty of philosophy with all its numerous branches of sciences and languages and also the faculty of medicine are open to those who attended a realgymnasium (privileges which formerly were reserved to pupils of the gymnasium only), it will perhaps be of interest to the American readers to know on what grounds the adherents of the modern system (realgymnasium) demand the same privileges that are granted to the gymnasium from the very beginning of the secondary and high-school systems.

The contest is an old one and, as all struggled for privileges, was, at times, fought with great animosity on both sides. It is, I dare say, owing to the lively interest which our Emperor takes in school matters that the end of the war between the two species of schools is in sight. When the "Realschule," now called realgymnasium, was established (the first seed was planted in the ground by Comenius and the growing tree was fostered by Franke, Samler and Hecker) it had nothing to do with the university. Its pupils, after seven years' instruction, were only allowed to continue their studies in a technical college (called polytechnicums, academies, etc.), but none was allowed to enter the sacred halls of the universitas litterarum, where only pupils who had sat nine years on the forms of the gymnasium were admitted.

It was evident that with such a difference in the school years the pupils of the realschule could not rival those of a gymnasium. So two more years were added to the former, it was called "realgymnasium" (the name realschule was preserved by a school of the lower kind containing six classes only);

and then competition for the same rights and privileges began. Step by step the realgymnasium has gained ground and now its position is as firmly established as that of the gymnasium.

Two important victories are gained, two faculties of the university are opened to the realgymnasium; only one more is wanted in order to be equal to its adversaries. It is the right of studying law which the adherents of the realgymnasium demand. This granted, they willingly leave the right to study theology to the pupils of the gymnasium. But why do they claim the right to study law? For those who know the German institutions, the reason is most evident. A jurist with us may get any place he likes; all the high state offices are within his reach, orders and titles pour down upon him in showers. For proof of this let me state that all the state secretaries in Saxony, except one (the secretary of the state for war) are jurists. In Prussia it is nearly the same. The number of judges, lawyers, attorneys and notaries is enormous, and besides the best places in all branches of government are reserved to jurists. There is no banking firm of importance and renown but has a jurist among the board of directors; even the great industrial enterprises avail themselves of the services of a jurist with a fixed salary that by far exceeds the income of non-juristic officials.

It is easily conceivable that the desire to win this important position is most ardent on the side of the reform party, and that it is obstinately fought against by the gymnasium. Let us see, now, if there is any reason to believe that the pupils of the realgymnasium are unable to study the law because wanting the stock of learning which is absolutely requisite to enter into the spirit of the laws. For this purpose we must first examine what means the gymnasium has to prepare the minds of its pupils for this study.

The bases of instruction in this school are the classical languages, Latin and Greek, and besides history and mathematics. All those who know the above named languages, must own that their value, as a means of training the spirit, of forming the mind and of teaching the boys to think logically, is unrivaled.

Those who master these languages have passed through a training of the mind that may be called "spiritual gymnastics," and that enables them to enter into any subject, however deep or learned it may be.

But are the classical languages the only means to lead us to that end? Is the antique world the only one which has produced great statesmen, orators, poets, and artists?

To this we resolutely answer, no. However rich in forms and varied in construction the classical languages may be, in richness of thought the modern languages are not one step inferior to them. Compare the tragedies of Sophocles to those of Shakespeare, and you will not be long in doubt whether you shall give the palm to the *heathen* or to the *Christian* poet, and if you read Molière's comedies after those of Plautus, you will easily observe how far they surpass their model and source in beauty and perfection. And what treasures are hidden in that species of writing which the ancients did not know at all, the novel, etc.; does not our face brighten when we think of Dickens, Thackeray, Bret Harte, Mark Twain, Eliot, Bourget, Huysman, Loti, and others? Is there, within all the range of classical lyric poetry, anything that can be compared to Tennyson's "In Memoriam?" We see that there is an *embarras de richesse* as to the means of filling heart and mind with sublime notions concerning everything that touches human life and human destiny on this side and beyond the grave.

I think we need but indicate the treasures which are hidden in modern languages—to enumerate them all would by far exceed the space allotted to me in this periodical—to show of what value they are for the cultivation of the *heart* as well as of the *brain* of our youth. I must claim that in the first point they even surpass the classical languages. Take, for instance, the pearl of all the antique tragedies, Trilogy of Oedipus: King Oedipus, Oedipus in Kolonos and Antigone, what things are shown us here. The murder of a father by his son; the incest between mother and son; the suicide of the most lovely person antique poetry has produced. Is it not shocking to our *Christian* notions, repulsive to our esthetical and moral feelings?

What profit does the *heart* derive from such readings? It is awful the dreadful reign of destiny that pervades all the tragedy; with awe I read it when I was young, with awe I read it, now that I am old. As to the form, of course, I know nothing more sublime than the chorus of this trilogy; nothing, indeed, can be compared to the beauty of its language. But not even the touching instance of filial love given by Antigone can efface the horror of its contents.

But it is not the heart, you will observe, with which the jurist has to work, but the brain, and I perfectly agree. For that purpose the pupil of the realgymnasium has to learn Latin to nearly the same extent as the pupil of the rival school. It is only the Greek which is wanting in the former species of schools—pupils learn English in its place. On the other hand, the study of mathematics in the realgymnasium is far more intensive than in the gymnasiums, and its importance for the cultivation and training of the brain is universally acknowledged. In one branch of science, which is particularly fit to enlighten the mind, to teach us logical thinking, in natural history and physics, chemistry, mineralogy, etc., the realgymnasium is far superior to the gymnasium, which has scarcely any instruction in these branches of science. The importance of natural history is not yet universally known, and yet it is just this science, which dispersed the dark ideas of witchcraft and superstition, which caused the rack, the stake, the Inquisition, and the horrid persecutions for sorcery, those blemishes of Christianity, to disappear. The knowledge of this science I think particularly requisite for a jurist, who in so many cases has to deal with practical life, and who in all lawsuits of this kind is entirely dependent on the judgment of an expert, and can decide nothing of his own knowledge or conviction.

There remains one question: Is the realgymnasium able to give its pupils also an ethical instruction equal to that of a gymnasium? I think it is. If you teach religion according to the true spirit of the New Testament, you will lead your pupils through a course of ethics which surpasses all that can be

taught in other branches of instruction. That the pupil can read the New Testament in Greek, the other only in German, makes not the least difference as to the contents, the kernel of the whole instruction. In works of literature it is quite another thing. Man, after the notions of the ancients as they are expressed in its works of literature, is entirely dependent on a blind fate, called Moira, or on the despotic will of tyrannical, wayward gods that are stained with all human vices and foibles. The masterworks of modern literature, however, are consciously or unconsciously written in a way congenial to our Western feeling; the spirit of Christendom pervades them from beginning to end, knowing no blind fate, no irascible and revengeful god but the voice of God in our own bosom — conscience. "In your own bosom are the stars of your fate," these words of Schiller's are the ethical base of our modern drama; in your own heart rises the guilt; the catastrophe is the atonement, the expiation for it. Not the anger of the gods has been assuaged by this catastrophe, but your heart has been purified and humbled, and the eternal, divine order of things has been restored, and has rebuilt what human sin destroyed. Thus we find it in Schiller, Goethe, Lessing, but above all in that "revealer of the heart," the poet of the conscience, the poet of poets, Shakespeare.

We hasten to the conclusion. The impartial observer must confess that a difference between the value of the instruction got in the gymnasium and realgymnasium no longer exists. If the gymnasium has still more pupils than the rival school; if there are about three times as many gymnasiums in Germany as realgymnasiums; if the gymnasium has the more gifted pupils, the reason is not to be found in the value and amount of knowledge got in either school, but in the privileges which surround the classical school like a rampart. The breach which was made in this wall by the realgymnasium is getting larger and larger; the time cannot be far when the rampart will fall, and then it will be the task of the gymnasium to show that it is a match for its rival. There are already among the teachers of the gymnasium, at least among those who are fully convinced

of the value of their instruction and of their own value as teachers, persons who wish for the entire co-ordination of the two species of schools; for "if the gymnasium," they say, "can exist only in consequence of the privileges granted to it, and not by its own intrinsic value, it is not worthy to exist."

OSCAR THIERGEN.

DRESDEN.

EDITORIAL NOTES.

We publish in this number of the Review the first of our promised series of articles on social aspects of education. Professor Vincent's contribution puts the entire movement before us, in both its underlying philosophy and its practical tendencies, and is thus a worthy introduction to the series. Successive issues will discuss "Ethics in the High School;" the "Responsibility of the High School to the Business Community;" the "Correlation of the Educational Forces of the Community;" "Social Phases of High School Discipline," etc.

The articles in this issue of the Review, bearing upon southern education, will prove intensely interesting far beyond the geographical limits immediately concerned. They present to our readers a vivid and accurate picture of educational conditions and educational struggles in the South. The presentation loses nothing in coming from those who are having to reckon practically with the problems. The educational progress in the South is a matter of utmost importance to the country as a whole. This has been recognized so far as relates to the instruction of the colored people. The larger part of money for their higher schools, and probably by far the greater number of their teachers, have come from the North; but certainly the efforts to reorganize the higher education of the whites and put it upon the most advanced plane is of no less importance to the nation as a whole.

The articles in question make clear the unnecessary multiplication of preparatory schools and of colleges. It makes clear the multiplication of courses in the colleges. It sets in a clear light the pretentious ambitions of many of the institutions. It shows the difficulties arising from lack of funds, and from the social life in the South after the war. They reveal with equal clearness the interest that is awakened in educational problems, and the courage with which the difficulties of the situation are being faced. The willingness of our southern educational brethren to look at highly disagreeable facts just as they are, and to expose them to each other and to the world, is a most encouraging sign. To know the difficulties is to take more than half the steps necessary to correct them. The courage that is shown in recognizing them is proof that energy to deal with them adequately will be forthcoming. On the whole we have no doubt but our readers will agree that the picture drawn is a cause for encouragement rather than for despondency. The best wishes of those engaged in higher education where outward conditions are more favorable, and congratulations upon what has already been accomplished, go forth to our fellow-workers in the South.

OTHERS than teachers of botany will be interested in the report of the committee appointed by the Society for Plant Morphology and Physiology, published in other pages of the REVIEW. The report has been adopted by the college-entrance examination board of the Middle States and Maryland, and represents in so far an accomplished fact. Nothing is more significant in recent education than the tendency of scientific associations to take a positive interest in the educational aspects of their specialties. In the long run, it is quite probable that such voluntary co-operation and supervision will quite equal in efficiency the action of centralized administrative bureaus in Europe — and will indeed accomplish all the more because their recommendations have intellectual and moral instead of political authority.

It requires only submission to follow the dictates of an administrative superior; it demands and cultivates deliberation, discussion, and insight to adopt the suggestions of a scientific body. Moreover, the reflex influence upon any body of men of knowing that more than their "say so" is required to put into effect their educational ideas is most helpful. In considering the chances of adoption of recommendations, a body instinctively broadens its outlook and takes into account diverse and individual factors which are overlooked when decision is more arbitrary. Such recommendations are also more likely to be flexible and adaptable, while those of a governing bureau tend to rigidity and the inelasticity of the doctrinnaire.

We are probably too close to see the full significance of the movement initiated by the Committees of Ten and Fifteen. There will come a time when the record of the successive actions of educational and scientific associations may be adequately written. It will then be seen to mark an epoch not merely in the educational development of the United States, but in the evolution of the intellectual life of the world. For the present, the specific recommendations of these bodies and the degree in which they modify actual school practice are minor matters. The significant thing is the interest, the attitude shown, and the forces set in motion. It is through such methods that democracy will justify itself in education as well as in politics.

NEW PUBLICATIONS

ENGLISH LANGUAGE AND LITERATURE.

What is Shakespeare? By L. A. Sherman, University of Nebraska. Size, 5½ × 8 in.; pp. 414. Price. $1.50. New York: The Macmillan Company.

Applied English Grammar. By Edwin Herbert Lewis, Lewis Institute, Chicago. Size, 5 × 7 in.; pp. 163. Price, 35 cents. New York: The Macmillan Company.

Four Old Greeks. By Jennie Hall, Chicago Normal School. Size, 4½ × 7 in.; pp. 224. Price, 35 cents. Chicago: Rand, McNally & Co.

EDUCATION, PHILOSOPHY, PSYCHOLOGY.

The Foundation of Education. By Levi Seeley, Ph.D., New Jersey State Normal School. Size, 5 × 7½ in. New York: Hinds & Noble.

The Training of Teachers. By S. S. Laurie, A. M., University of Edinburgh. Size, 5 × 7½ in.; price, $1.50. Cambridge: University Press.

Educational Foundations of Trade and Industry. By Fabian Ware. Size, 5 × 7 in. New York: D. Appleton & Co.

The College Student and His Problems. By James Hulme Canfield, Librarian of Columbia University. Size, 5 × 7 in.; pp. 197. Price, $1.00. New York: The Macmillan Company.

The Care of Destitute, Neglected and Delinquent Children. By Homer Folks. Size, 4½ × 7 in.; pp. 251. Price, $1.00 New York: The Macmillan Company.

FOREIGN LANGUAGES AND LITERATURE.

Minna von Barnheim. Edited by Sylvester Primer, University of Texas. Size, 5 × 7 in.; pp. 218. Price, 75 cents. Boston: D. C. Heath & Co.

Körner's Zriny. Edited by Franklin J. Holzworth, Syracuse University. Size, 4½ × 6½ in.; pp. 126. Price, 35 cents. Boston: D. C. Heath & Co.

Heyse's Niels mit der offenen Hand. Edited by Edward S. Joynes, South Carolina College. Size, 4½ × 6½ in.; pp. 105. Price, 30 cents. Boston: D. C. Heath & Co.

Le Voyage de M. Perrichon, Labiche and Martin. Edited by G. Castegnier, A. H. Cutler School, New York. Size, 5 × 7 in.; pp. 120. Price, 35 cents. New York: American Book Co.

L' Enfant De La Lume. By Jeanne Mariet. Edited by Edith Healy. Size, 5 × 7½ in.; pp. 126. New York: American Book Co.

First Year Latin. By W. W. Smith, B. A., Central Preparatory School. Size, 5 × 7½ in.; pp. 365. Price, $1.00. New York: William R. Jenkins.

Allessandro Manzoni's I Promessi Sposi. Edited by Moritz Levi, University of Michigan. Size, 5 × 7½ in.; pp. 329. New York: Silver, Burdett & Co.

Homeric Society. By Albert Galloway Keller, Yale University. Size, 5 × 7½ in.; pp. 525. New York: Longmans, Green & Co.

SCIENCE AND MATHEMATICS.

Herbarium and Plant Description. By W. H. D. Meier, Griggsville Public Schools. Size, 9½ × 11 in. Boston: Ginn & Co.

A Laboratory Manual of Physics. By Henry Crew, Northwestern University, and Robert R. Tatnall, Northwestern University. Size, 5½ × 7½ in.; pp. 234. Price, 90 cents. New York: The Macmillan Company.

Invertebrate Zoölogy. By Henry Shevring Pratt, Harvard University. Size, 5½ × 8 in.; pp. 210. Price, $1.35. Boston: Ginn & Co.

New Practical Arithmetic. By Eugene L. Dubbs. Size, 5 × 7 in.; pp. 440. Price, 60 cents. New York: Ginn & Co.

Handbook of the Trees of New England. By L. L. Dame and Henry Brooks. Size, 4½ × 7½ in.; pp. 196. Price, $1.35. Boston: Ginn & Co.

HISTORY, POLITICS, ECONOMICS.

Britain and the British Seas. By H. J. MacKinder, University of Oxford. Size, 6 × 8½ in.; pp. 377. Price, $2.00. New York: D. Appleton & Co.

History of Central High School of Philadelphia. By Franklin Spencer Edmonds, Central High School. Size, 5 × 8 in.; pp. 394. Price, $2.00. Philadelphia: J. B. Lippincott Co.

Four American Inventors. By Frances M. Perry. Size, 5 × 7½ in.; pp. 260. Price, 50 cents. New York: Werner School Book Co.

THEOLOGY AND RELIGION.

Cambridge Bible for Schools and Colleges — The Acts. By J. Rawson Lumby. Size, 4½ × 6½ in.; pp. 387. Price, $1.10. Cambridge: At The University Press.

Cambridge Bible for Schools and Colleges — Psalms IV and V. By A. F. Kirkpatrick, Selwyn College. Size, 4½ × 6½ in.; pp. 347. Price, 80 cents. Cambridge: At the University Press.

MUSIC.

Elements and Notation of Music. By James M. McLaughlin, Director of Music, Boston Public Schools. Size, 5 × 7½ in.; pp. 124. Price, 55 cents. Boston: Ginn & Co.

MISCELLANEOUS.

Graded Physical Exercises. By Bertha Louise Colburn. Size, 5½ × 7½ in.; pp. 389. Price, $1.00. New York: Edgar S. Werner Pub. and Supply Co.

Delsarte System of Expression. By Genevieve Stebbins. Size, 5½ × 7½ in.; pp. 507. Price, $2.00. New York: Edgar S. Werner Pub. and Supply Co.

NOTES

CLASSICAL CONFERENCE PROGRAM.

The following is the program of the Classical Conference which will be held at Ann Arbor, Mich., on Thursday and Friday, March 27 and 28. Papers marked with an asterisk will be illustrated by the stereopticon.

THURSDAY, MARCH 27.

MORNING SESSION.

Presiding officer, Professor Samuel Ball Platner, Western Reserve University.

1. "The Making and Use of a Latin Lexicon," Professor John C. Rolfe, University of Michigan.
2. "The Prometheus of Æschylus and the Prometheus of Shelley," Principal J. H. Harris, Michigan Military Academy.
3. *"The De Criscio Collection of Latin Inscriptions," Professor Walter Dennison, Oberlin College.
4. "Some Questions of Word-Order and Cadence in their bearing on the Authorship of the Pseudo-Cæsarian Writings," Dr. Clarence Linton Meader, University of Michigan.
5. "Quintilian on Extempore Speaking in the Light of Later Teaching," Professor George V. Edwards, Olivet College.
6. "Dido — A Character Sketch," Mr. J. Raleigh Nelson, Lewis Institute, Chicago.
7. *"Classic Sites in Sicily," Professor B. L. D'Ooge, State Normal College, Ypsilanti.

AFTERNOON SESSION.

Presiding officer, Professor J. C. Jones, University of Missouri.

1. "An Ancient Misogynist," Professor F. S. Goodrich, Albion College.
2. "Greek and Runic Letters and Figures," Professor George Hempl, University of Michigan.
3. "Notes on Horace," Professor Wallace S. Elden, University of Ohio.
4. "The Epigraphic Sources of Dion Cassius," Dr. Duane Reed Stuart, State Normal College, Ypsilanti.
5. "The Worship of the Lares," Dr. Gordon J. Laing, University of Chicago.
6. "The Psychological Background of Indirect Discourse," Professor John J. Schlicher, State Normal School, Terre Haute, Ind.
7. "A Review of Gildersleeve's Greek Syntax," Professor S. J. Axtell, Kalamazoo College.
8. "The Similes of Apollonius Rhodius compared with those of Virgil and Homer," Mr. M. C. Wier, Michigan Military Academy.

EVENING SESSION.

The Classical Conference is invited to attend a general session of the Michigan Academy of Sciences.

FRIDAY, MARCH 28.

MORNING SESSION.

The Classical Conference is invited to attend a general session of the Michigan Schoolmaster's Club, which will take up the subject. Of special interest to classical teachers will be the paper on "Controlling Conceptions in Syntactical Study," by Professor William Gardner Hale, of the University of Chicago, and that on "Recent Changes in the Curriculum of the German Gymnasium," by Dr. Henry A. Sanders, of the University of Michigan.

AFTERNOON SESSION.

JOINT SESSION OF THE HISTORICAL AND CLASSICAL CONFERENCES.

Presiding officer, Professor Richard Hudson, University of Michigan.

1. "An Experiment in the Teaching of Roman History to Young Pupils," Mr. J. Raleigh Nelson, Lewis Institute, Chicago.
2. "The Relation between Grecian and Roman History," Dr. Arthur L. Cross, University of Michigan.
3. *"A Trip in Greece as a Preparation for Teaching Greek History," Miss May E. Barnes, Bay City High School.
4. *"In the Footsteps of Cæsar in Gaul," Principal George R. Swain, Bay City High School.

EVENING SESSION.

The Classical Conference is invited to attend a general session of the Michigan Schoolmasters' Club. An illustrated lecture will be given on "Ten Years of Excavation at Pompeii, 1892–1901," by Professor Francis W. Kelsey, of the University of Michigan.

Those who wish to avail themselves of reduced railroad rates in attending the Conference are requested to send their names at once to Superintendent H. M. Slauson, Ann Arbor, Mich.

The proceedings of the Conference will be published in the SCHOOL REVIEW for May.

The following is the gist of the report of the committee of the Society for Plant Morphology and Physiology upon a standard college entrance option in botany:

PRINCIPLES UPON WHICH THE COURSE IS FORMULATED.

1. It is founded upon the two important reports of the National Educational Association — the Report of the Committee of Ten (Washington, 1893), and the Report on College Entrance Requirements (Chicago, 1899).

2. It is intended primarily as an option for entrance to college, but equally for the education in the high school of the general student who can follow the subject no farther; there are in botany no advantages in having the college preparatory and the general educational courses different, at least none that are at all commensurate with the additional burden thus laid upon the schools.

3. It should, if possible, be founded upon a considerable body of botanical fact learned through "Nature Study" in the lower schools; it should form part of a four years' high-school course in the sciences; it should be considered and treated as an elementary or preliminary course leading to second courses in college, and colleges

accepting the option should make provision to articulate second courses economically with it.

4. The immediate plan of its construction is very simple, namely, to include those topics in the leading divisions of the subject which most teachers now regard as fundamental, either for their value in scientific training, or as knowledge.

5. The time per week, inclusive of recitation, preparation, and laboratory should be the same as for any other subject. Where five periods a week with an hour of preparation for each are demanded for other studies, this course should receive the equivalent of two recitation periods with their preparation, together with three double (not six separated) periods in the laboratory and a small amount of outside related work or preparation. Variation from this should be towards a greater, not a lesser proportion of laboratory work.

6. The preparation of records of the laboratory work, in which stress is laid upon diagrammatically accurate drawing and precise and expressive description, is regarded as an integral part of the course; and these records, preferably in a notebook, must be presented with the examination-paper, and will count one-third towards admission.

7. There must be provided (*a*) a full-year option, (*b*) a half-year option, (*c*) the possibility of a two years' option.

SPECIFICATIONS.

The full year option, to count as 1 unit or point out of 13 to 15 for entrance, will consist of: (I) A half year devoted to the general principles of anatomy, morphology, physiology, and ecology; (II) a half year devoted to the natural history of the plant groups, with classification.

(Under special circumstances, though it is not advised, the full-year option may consist of II enlarged to occupy a year and including the essentials of I.)

The half-year option, to count as 1 unit or point out of 26 to 30 for entrance may consist of either I or II above, but not of a composite of both.

A half-year option consisting of a composite of I and II, although recognized as profitable under some local conditions, is not here included; since, while it is not considered educationally superior, if equal, to I or II more thoroughly studied, it will be impossible for colleges to make arrangements to articulate it profitably with the higher courses in addition to I and II; and moreover, examination boards will find obvious difficulties in providing examinations for it.

The two years' option will consist of I enlarged to a year, together with II enlarged to a year.

I. *The half-year option in the general principles of anatomy, morphology, physiology, and ecology.*

The fundamental topics are the following:

A. In anatomy and morphology.

The seed: Four types (dicotyledon without and with endosperm, a monocotyledon and a gymnosperm); structure and homologous parts. Food supply: experimental determination of its nature and value. Phenomena of germination and growth of embryo in a seedling (including bursting from the seed, assumption of position and unfolding of parts).

The shoots: Gross anatomy of a typical shoot; the arrangement of leaves and buds on the stem, and deviations (through light adjustments, etc.) from symmetry. Buds, and the mode of origin of new leaf and stem; winter buds in particular. Specialized and metamorphosed shoots (stems and leaves). General structure and distribution of the leading tissues of the shoot; annual growth; shedding of bark and leaves.

The root: Gross anatomy of a typical root; position and origin of secondary roots; hair-zone cap and growing point; origin of new roots. Specialized and metamorphosed roots. General structure and distribution of the leading tissues of the root.

The flower: Structure of a typical flower, especially of ovule and pollen; nectar glands; functions of the parts. Comparative morphological study of six or more different marked types, with the construction of transverse and longitudinal diagrams.

The fruit: Structure of a typical fruit, especially with reference to changes from the flower, and from ovule to seed. Comparative morphological study of six or more marked types, with diagrams.

Where Options I and II are combined to form a year course, this comparative morphological study of flowers and fruits may advantageously be postponed to the end of II, and then taken up in connection with classification of the angiosperms.

The cell: Cytoplasm, nucleus, sap-cavity, wall. Adaptive modifications of walls, formation of tissues.

The sequence of topics above given, with the exception of the position of the cell, is that recommended by the committee, but the precise sequence is not considered important.

As to the study of the cell, it is by no means to be postponed for consideration by itself after the other topic, as its position in the above outline may seem to imply, but it is to be brought in earlier along with the study of the shoot or root, and continued from topic to topic. Although enough study of the individual cell is to be made to give an idea of its structure (a study which may very advantageously be associated with the physiological topics first mentioned under B) the principal microscopical work should consist in the recognition and study of the distribution of the leading tissues.

B. In physiology.

Rôle of water in the plant; absorption (osmosis) path of transfer, transpiration, turgidity and its mechanical value, plasmolysis. Photosynthesis: dependence of starch formation upon chlorophyll, light and carbon dioxide; evolution of oxygen, observation of starch grains. Respiration: necessity for oxygen in growth, evolution of carbon dioxide. Digestion: digestion of starch with diatase, and the rôle of digestion in translocation of foods. Irritability: geotropism, heliotropism, and hydrotropism; nature of stimulus and response. Growth: localization in higher plants; amount in germinating seeds and stems; relationships to temperature. Fertilization: sexual and vegetative reproduction.

Although for convenience of reference, the physiological topics are here grouped together, they should by no means be studied by themselves and apart from anatomy and morphology. On the contrary, they should be taken up along with the study of the structures in which the processes occur, and which they help to explain; thus, photosynthesis should be studied with the leaf, as should also transpiration, while digestion may best come with germination, osmotic absorption with the root, and so on. The student should either try, or at least aid in trying, experiments to demonstrate the fundamental processes underlined above.

C. In ecology.

Modifications (metamorphoses) of parts for special functions. Dissemination. Cross-pollination. Light relations of green tissues; leaf mosaics. (Plant societies; mesophytes, hydrophytes, halophytes, xerophytes; climbers, epiphytes, parasites (and saprophytes), insectivora, symbiosis.) (Plant associations, and zonal distribution.)

The topics in ecology (particularly the first four and in part the fifth), like those in physiology, are to be studied not by themselves, but along with, and in dependence upon, the structures with which they are most closely connected, as cross-pollination with the flower, dissemination with the seed, etc. The fifth and sixth may be most advantageously studied with G in Part II, and are to be considered as recommended rather than as required.

In this connection field work is of great importance, and for some topics, such as the sixth, is indispensable, though much may be done also with potted plants in greenhouses, photographs, and museum specimens. The committee strongly recommends that some systematic field work be considered as an integral part of the course, co-ordinate in definiteness and value as far as it goes with the laboratory work. The temptations to haziness and guessing in ecology must be combated.

MATHEMATICS FOR THE LAST HALF YEAR

EXERCISE BOOK IN ALGEBRA

By MATTHEW S. McCURDY

A collection of exercises similar in character to those in the ordinary text-books, of medium grade as to difficulty, valuable as supplementary work, and giving an especially thorough and effective drill upon those subjects which are needed in preparation for college entrance examinations. Cloth. 226 pages. Price, 60 cents.

Essentials of Solid Geometry

By WEBSTER WELLS

Offers a practical combination of more desirable qualities than any other geometry ever published. Characterized by the inductive method of demonstration and by an unusually large number of carefully graded original exercises, this book develops strongly the power of vigorous, independent, and logical thought. Half Leather. 399 pages. Price, $1.50.

Complete Trigonometry

By WEBSTER WELLS

A new Trigonometry with many improvements, notably in the proofs of functions, the general demonstrations of formulæ, the solution of right triangles, etc. Plenty of exercises, most of which are new, have been selected with great care and are to be worked out with the author's Four-Place Tables. Half Leather. 148 pages. Price, 90 cents.

DESCRIPTIVE CIRCULARS SENT ON APPLICATION

D. C. HEATH & CO., Publishers

BOSTON NEW YORK CHICAGO LONDON

SUPERINTENDENT BALLIET has the following regarding high-school vacation work which will be of interest to our readers. So far as we know this work has been usually confined to the grades. Superintendent Balliet's suggestions ought to bring forth fruit in other cities.

The school conducted in the Mechanic Arts High School Building was in charge of Edwin A. Finch, one of the regular teachers in the high school. This school was for boys who were older than those admitted to the school at Elm street. There were 60 enrolled, varying in age from 13 to 16 years. They were divided into three equal sections, each section having a daily lesson of two hours in length. The instruction was confined wholly to woodwork. The first three weeks of the session were devoted to joinery and the last three to wood turning. The boys were allowed somewhat larger liberty than is usually permitted in regular manual training schools to make objects of interest to them, and this freedom contributed not a little to the success of the school. After the lesson for the day was over as many of the boys as could obtain permission to do so remained for extra work. The cost of this school for the six weeks was $150 for salary of teacher, $30 for salary of janitor, and a small sum for material.

Vacation schools are conducted at public expense in a number of our larger cities, and are a legitimate part of the public-school system. The manual training feature of these schools, which forms the main part of their work in this city, could be conducted without great cost at public expense. The Mechanic Arts High School, the State Street Grammar School, the Elm Street School, the Carew Street School, and the Forest Park School have each a well-equipped shop. Any of these shops could be used during the summer vacation with no expense except for material and salaries. I would recommend that the city government be asked to appropriate the necessary funds to run these shops, or as many of them as may be needed, for a term of six weeks during the next summer vacation.

Lake French Readings

Under the editorial supervision of EDOUARD P. BAILLOT,
Northwestern University, Evanston, Ill.

The purpose of this series of books is to supply reading material for the latter part of the first year and the early part of the second year of the student's work in French. To this end, introductions and notes are explanatory and suggestive, and each of the volumes is provided with a vocabulary.

The books are bound in brown cloth with back and side stamp, and are very attractive volumes for the student's library. Price, 50 cents each.

Easy French Plays

Edited by CHARLES W. BENTON, LITT. D., *University of Minnesota*

This selection of plays will be found simple enough for early reading and will hold the interest of beginners. The book will give the student some acquaintance with the kind of literature in which the language is rich. It contains "LA GRAMMAIRE," by Eugene Labiche, "LA JOIE FAIT PEUR," by Madame Emile de Girardin, and "LES DOIGTS DE FEE," by Eugene Scribe, all of which are standard.

Easy French History

Edited by ERNEST SICARD, *Northwestern High School, Chicago*

Many teachers of French find that their students do not understand and appreciate the works which they are called upon to read, because of their ignorance of the most ordinary facts of French History. How and when to give this necessary information has become a problem everywhere, and it is to aid in the solution of this problem that the present book has been published. The style of the book is so simple that it may be put into the hands of pupils as soon as they have acquired a knowledge of the principal irregular verbs. The text is mainly that of a little book used in the schools of France with some rearrangements and additions. Each chapter is followed by a series of questions to bring out the facts of the chapter by way of conversational review. The book contains a map of France.

Easy French Stories

Edited by H. PARKER WILLIAMSON, of the *University of Chicago*, and BENEDICT PAPOT, of the *Lake Forest Academy*.

The book contains nine short stories by Guy de Maupassant, Ludovic, Halevy, Alexandre Dumas fils, Henry Lavedan, and Paul Margueritte. These authors are among the foremost of the second half of the nineteenth century. Such a collection of stories will acquaint the student with many sides and characteristics of French life, as well as with the thought of a large number of men whose influence is felt the world over.

SCOTT, FORESMAN & COMPANY, Publishers

378-388 Wabash Avenue : : : : : : : *CHICAGO*

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

MEDAL AWARDED TO THE SCHOOL REVIEW IN CLASS 2
AT THE PARIS EXPOSITION OF 1900